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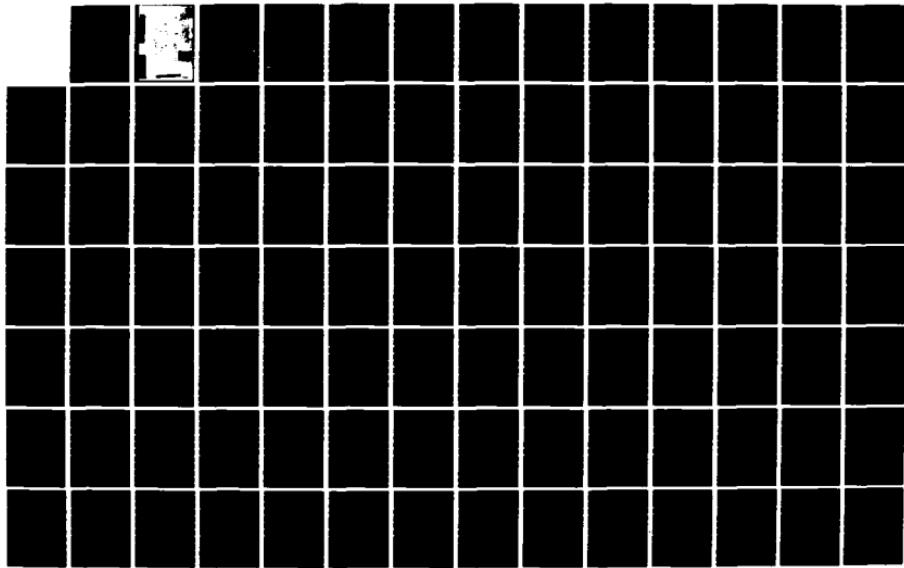
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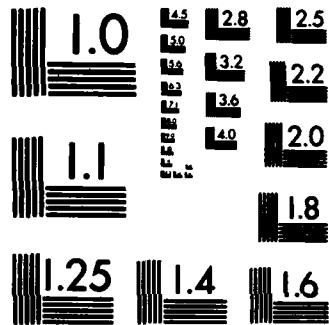
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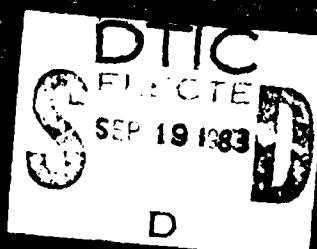
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A MONOGRAPH

AN EVALUATION OF THE UNITED STATES
AIR FORCE MENU CONCERNING
KILOCALORIE, TOTAL FAT, CHOLESTEROL
AND SODIUM

DICK P. FLACK

1983



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AN EVALUATION OF THE UNITED STATES AIR FORCE MENU CONCERNING
KILOCALORIE, TOTAL FAT, CHOLESTEROL AND SODIUM

A Monograph

Presented to the Faculty of the Graduate School
of Cornell University
in Partial Fulfillment of the Requirements for the Degree of
Masters of Professional Studies

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Dick P. Flack

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Dick P. Flack

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ABSTRACT

Statement of the Problem

Nutrition as a science and its relationship to health is still in its infancy, yet there are numerous known problems associated with one's diet. Additionally, there are a number of dietary concerns that have not been proven and are currently being researched that need to be addressed. The major thesis of the nutritional concerns seems to focus on if and how diets should be modified. The United States Federal government has taken the initiative by adopting dietary guidelines for the American population. As a segment of the federal government, the United States Air Force (USAF) has the task of adopting these guidelines in its menu planning. This monograph investigates the pros and cons of some of the dietary goals set forth by the government. This investigation is followed by calculations of the nutritional value of calories, total fat, cholesterol, and sodium within the present USAF menu. The monograph concludes with a discussion of these nutrient values meeting the dietary goals.

Methodology

A statistical random selection from a USAF menu of daily meals was analyzed as individual entrees and calculated for their content of kilocalories, total fat, cholesterol, and sodium. Additionally, a review of all available literature on dietary guidelines was considered to be invaluable.

Conclusion

The monograph concludes that the Air Force menu approaches the dietary goals if the customer is knowledgeable in making the proper menu item selection. But without good nutritional knowledge the customer can select menu components that far exceed the recommended dietary goals.

BIOGRAPHICAL SKETCH

Dick Flack was born and raised in a resort community in New York's Catskill Mountains. His hospitality training began there while working in the family's bakery business. After graduating from high school, he attended Kansas State University and received a BS degree in Bakery Science and Management.

Flack was commissioned into the United States Air Force upon finishing his undergraduate work and for the past ten years has held various hospitality-related positions within the Air Force. Because of his experience and probable future assignments in this same field, he was nominated and selected by the Air Force to enter a graduate program in the hospitality field.

After Flack's completion of his Masters of Professional Studies through Cornell University's School of Hotel Administration in May, 1983, he will return to a position in the Air Force to apply his training.

The completion of my studies at Cornell University and this monograph could not have been accomplished without my family's loving support and understanding.

I dedicate this work to --

my wife Barbara

daughters Leah and Natalie

ACKNOWLEDGEMENTS

There are three special people I owe a great deal of thanks to for helping me accomplish this project.

I owe a big debt to Professor Mary Tabacchi. As an advisor and a friend, she has been a super lady to work with. From the courses she taught I was inspired to undertake this project. She also continued to give me this same inspirational guidance throughout the development of this paper. Professor Tabacchi was always ready and available to provide the necessary details to insure I was going in the right direction. Her review, critiques and feedback of each page always gave me a positive feeling to move forward.

I wish to give thanks to the staff at Headquarters Air Force Engineering and Services Center, Tyndall AFB, Fl., and especially Mrs. Germaine Gotshall for her supply of information whenever I asked.

I also wish to give special thanks to my personal editor, my wife Barbara, who made sure I did not lose command of the English language.

CONTENTS

| BIOGRAPHICAL SKETCH | ii |
|---|-------------|
| DEDICATION | iii |
| ACKNOWLEDGEMENTS | iv |
| | |
| <u>Chapter</u> | <u>page</u> |
| INTRODUCTION | 1 |
| I. NUTRITIONAL CONCERNS | 3 |
| Diet Patterns/Habits | 3 |
| Society Changes | 6 |
| Nutritional-Related Diseases | 7 |
| Government Interaction | 9 |
| II. DIETARY GOALS | 12 |
| Introduction | 12 |
| Dietary Goals | 13 |
| Purpose | 16 |
| Dietary Guidelines | 16 |
| Dietary Goals Pros and Cons | 17 |
| III. REVIEW OF NUTRIENTS STUDIED | 20 |
| Calories (Obesity) | 20 |
| Fat and Cholesterol | 24 |
| Sodium | 28 |
| IV. UNITED STATES AIR FORCE MENU PLANNING | 32 |
| Introduction | 32 |
| Menu Preparation | 35 |
| Menu Components | 36 |
| V. AIR FORCE MENU STUDY | 38 |
| Methodology | 38 |
| Results | 40 |
| Day 1, Nutritional Calculations | 42 |
| Day 2, Nutritional Calculations | 51 |
| Day 3, Nutritional Calculations | 60 |
| Day 4, Nutritional Calculations | 69 |

| | |
|---|-----|
| Day 5, Nutritional Calculations | 78 |
| Day 6, Nutritional Calculations | 87 |
| VI. CONCLUSION AND RECOMMENDATION | 96 |
| Kilocalories | 100 |
| Fat | 101 |
| Cholesterol | 101 |
| Sodium | 102 |
| REFERENCES CITED | 105 |

INTRODUCTION

The diet of the American population has changed significantly within the last 50 years, with great and often harmful effects on our health.¹ Now that deficiency and infectious diseases are largely conquered, there is a new nutritional approach to the management of the chronic degenerative diseases which now provide the greatest threat to the long-lived populations of this and other western nations.² Too much fat, too much sugar or sodium can be highly correlated with heart diseases, cancer, obesity and stroke, among other debilitating diseases.³ It is estimated that 27 million Americans have some form of heart and blood vessel disease. A million Americans a year die of cardiovascular disease, some 53% of total deaths; and one quarter of these are in persons under 65 years of age.⁴

¹ Congressional Select Committee on Nutrition and Human Needs, Dietary Goals for the United States (Washington, D.C. Government Printing Office, 1977), p.1.

² Robert E. Olson, "Clinical Nutrition, An Interface Between Human Ecology and Internal Medicine", Nutrition Reviews (June 1978), p. 171.

³ Dietary Goals for the U.S., op. cit., p. 1.

⁴ Michael C. Latham and Lani S. Stephenson, "U.S. Dietary Goals", Journal of Nutrition Education (Oct. - Dec. 1977), p. 154.

These concerns of diet-related degenerative diseases have become an issue in the Department of Defense's nutritional requirements and menu planning. This paper will analyze the United States Air Force's Worldwide Menu by comparing kilocalories, fat, cholesterol and sodium to the more recent governmental dietary goals. From a summary evaluation of these goals and calculated nutritional values, modifications of menus can be recommended. As with any universal dietary modifications there are concerns of its necessity for the total population. Is it possible that these changes are needed only for a select segment of the population?

To summarize these recent nutritional concerns and their possible affect on menu planning in the USAF, the first chapter contains a discussion concerning the eating patterns of the western population plus the recent social changes both of which may have contributed to diet-related degenerative diseases. Also considered are recommendations the government proposes to correct these problems. Chapter two provides the rationale for the dietary goals implemented in 1977 by a congressional select committee on nutrition and human needs. A literature review in Chapter three summarizes the selected goals for calorie, fat, cholesterol and sodium intake to validate the use of the dietary goals as a standard. The USAF menu-planning process and the nutritional calculations presented in chapters four and five respectively provide the basis for possible modifications of the USAF menu when compared to the dietary goals.

Chapter I

NUTRITIONAL CONCERNS

1.1 DIET PATTERNS/HABITS

Food patterns are based on folklore, commercial advertising and sound knowledge of nutritional needs.⁵ Dietary habits are the result of family influences which include sociocultural, educational, and economic factors. Availability of foods and what is promoted both formally in advertising and informally through in schools, restaurants, places of employment, etc., are additional considerations affecting food preferences.⁶ This makes worldwide menu planning for the Air Force somewhat difficult both from the standpoint of nutrition and eating patterns because its members come from all parts of the United States and foreign countries. In addition to various geographic, cultural, and genetic backgrounds of the Air Force members entering the service, there is also the added influence of stationing this diverse population throughout the world.

⁵ Miriam E. Lowenberg, Neige E. Todhunter, Eva D. Wilson, Jane R. Savage and James L. Lubawski, Food and Man, (John Wiley & Sons, N.Y., second edition, 1974), p. 118.

⁶ Dietary goals for the U.S., p. 5.

Nutrient requirements also depend on a variety of environmental factors that may be physical (i.e., average ambient temperature), biological (i.e., presence of infectious organisms) or social (i.e., physical activity, type of clothing, sanitary conditions and other patterns of behavior).⁷ For example, it is difficult to select a menu for an airman stationed in Alaska and at the same time meeting the needs of an airman stationed in Panama.

The influences of food patterns based on one's sociocultural background plus location may not be as influential as today's technological advances in food processing and advertising. A television advertisement study done in 1975 showed that nonnutritive beverages were the most advertised food group, capturing 40% of television commercial time. Sweets took up 11% of the time. When added to the previous mentioned televised time oils, fats, and margarines, baked goods, snack foods (often those low in nutrient density) total 70% of commercials concerning food. This left the remainder 30% of the advertising devoted to "nutritious foods", such as bread, cereals, pasta, meat, fish, seafood, dairy products, vegetables and nut products. Concerning the restaurants advertised, nearly all were limited menu, fast food, specializing in foods high in saturated fats and cholesterol.⁸ Even the so-called educational advertisements are often contradictory about what

⁷ Lieselotte Hofman, The Great American Nutrition Hassle, (Mayfield Co., CA, 1978), p. 27.

⁸ Dietary Goals for the U.S., p. 59.

to eat. As an example, advocates of lower fat diets recommended more low-fat dairy products, lean meat, poultry, fish, fruits and vegetables. But newspapers warned about pesticide residues on fruits and vegetables ... toxic chemicals in fish ... carcinogens in mushrooms, etc. There even was a point in time where weight loss mythology had convinced almost everyone that bread and potatoes were fattening. Adding foods high in fat to the "eat less" list made it seem like there was nothing left to eat nor to drink.⁹

Food processing technology may be more influential than advertising concerning one's eating habits. It is easier today to snack than eat three "square meals" and fewer foods are prepared from scratch--hence more processed, snack and fast foods are bought. It does not take a dietitian to realize how many of these processed or fast foods are fatty, salty, high in kilocalories and likely to cause weight gain.¹⁰ As waistlines grew larger the fitness thrust also grew. A recent survey suggests that consumers have been unsuccessful in losing weight since approximately 67% were reported to have been on a weight reduction diet every year since 1970. As a result of this dieting the consumption of many foods has increased because, rightly or wrongly, people perceive them to be lighter and lower in kilocalories. Some shifts in the diet have included more chicken, salads, fruit and cheeses, while there

⁹ Patricia Hausman, Jack Sprat's Legacy, (Richard Marek Publishers, N.Y., 1981), p. 35.

¹⁰ Hofman, op. cit., p. 339.

has been a decrease in cake, cookies, chips, butter and red meat.¹¹

1.2 SOCIETY CHANGES

The shift in diet has also been witnessed by the shifting of the social climate in the United States. The population is getting older. Within the last fifty years, life expectancy has increased by 20 years. Life expectancy for Americans is now the longest in history, 73.2 years.¹² At the same time total energy requirements have declined with the shift to a service or postindustrial economy with individuals working more with cognitive processes than with physical labor. In addition to the above mentioned lower energy needs: the average workweek has shortened from 70 hours per week to 40 hours or less; vacations are longer; there are more holidays, earlier retirements and more leisure time.¹³ Although living becomes increasingly sedentary, deeply ingrained food habits are slow and difficult to change. The per capita kilocalorie consumption has remained relatively stable during the past 65 years in the United States. In simple terms, more sedentary

¹¹ Florence R. Skelly, "The Attitudes of the Consumer", Nutrition Reviews (suppl. Jan. 1982), p. 38.

¹² Marylin Chou, David P. Harmon, Critical Food Issues of the Eighties, (Pergamon Press Inc., N.Y., 1979), p. 33.

¹³ Graham T. Molitor, "The Food Systems in the 1980's", Journal of Nutrition Education (Vol. 12 No. 2, suppl. 1980), p. 103.

lifestyles plus no change in caloric intake equals obesity.¹⁴ In fact, inactivity may contribute more to overweight than overeating. As for mental exertion, someone has estimated that the energy needed for one hour of hard thinking could be supplied by half a peanut.¹⁵

1.3 NUTRITIONAL-RELATED DISEASES

Past efforts in nutrition education were assuring an adequate diet--one with sufficient kilocalories, proteins, vitamins and minerals. Now it is believed that much of the ill health today may be due to overnutrition. This is more than simply eating too much but eating excessive amounts of specific nutrients, such as fats (especially saturated fat), salt and sugar.¹⁶ Add to these problems stress and lack of exercise, and the result may be an epidemic of diet-related diseases. What needs to be emphasized is that the foods are not causing cancer or heart disease, but the excess quantity may be a contributing factor. One must adjust his/her food intake to match energy expenditure. Our public health problems have shifted from undernourishment to overeating, and from the poor minority to the middle class.

¹⁴ Chou, Harmon, op. cit., p. 154.

¹⁵ Hofman, op. cit., p. 94.

¹⁶ Chou, Harmon, op. cit., p. 33.

A surgeon general report of 1979 listed the major causes of death for persons aged 25 to 64 as: heart disease, cancer, stroke, cirrhosis of the liver and accidents, while the major causes of death for persons over 65 were: heart disease, cancer, strokes, influenza/pneumonia, arteriosclerosis, and diabetes mellitus.¹⁷ From this survey age does not appear to be the major factor influencing type of degenerative disease. This is substantiated by the fact that it is estimated that one in three men and one in six women in the U.S. can be expected to die of heart disease or stroke before age 60. It is also projected that 25 million suffer from high blood pressure.¹⁸

At present there is substantial controversy over the causes of coronary heart disease. Among the many possible causes are cholesterol in the diet, saturated fatty acids, hypertension, obesity, inactivity, sex, cigarette smoking, stress, and hereditary factors.¹⁹ It should be noted that some of the causes are not diet-related.

The vast majority of Americans, approximately 70%, eat well and enjoy good nutritional health.²⁰ Predicting a national nutrition program on such an overwhelming majority, although logical, may not assist the groups at risk. It is estimated

¹⁷ Eleanor F. Eckstein, Food, People and Nutrition, (AVI Publishing Co, Inc, Conn., 1980), p. 8.

¹⁸ Dietary Goals for the U.S., p. 10.

¹⁹ Chou, Harmon, op. cit., p. 30.

²⁰ Molitor, op. cit., p. 103.

that 10% of our population's nutritional intake is lacking while 20% or upwards of the general population is either overfat or clinically obese.²¹

The debate about the need for dietary change in the U.S. to reduce chronic degenerative diseases will continue for years. Some comfort is provided by the fact that the coronary disease rate in this country has decreased since 1960, be it a result of improved diet, medical care or nutrition education.²²

1.4 GOVERNMENT INTERACTION

Only 30 years ago there was concern about recommended daily allowances to combat dietary diseases. Today, the concerns shifted to establishing maximum levels of nutrients to prevent diseases linked with dietary affluence or overabundance.²³

Nutrition, as the science of food and its relationship to health, is still in its infancy. Jean Mayer, former chairman of the White House Conference on Food, Nutrition and Health, has described nutrition as "an agenda of problems", the solution of which requires the application of all man's knowledge and technology. As a result, hypotheses abound and nutrition is credited or blamed for unrelated cures and sicknesses.

Only a decade ago nutrition evoked little interest. Today it is used as a solution for social, economic, and health prob-----

²¹ Ibid., p. 103.

²² Olson, op. cit., p. 179.

²³ Chou, Harmon, op. cit., p. 30.

lems. Future nutritional theories will come and go.²⁴

Nutrition has become a political concern similar to taxes, inflation and unemployment. A prominent USDA official has stated,

Our food production is one-sided. It includes a relative excess of the fat of meats, of starch and of sugar.²⁵

The USDA official who made that statement was Wilbur Olin Atwater, sometimes hailed as the "Father of American Nutrition." His statement appeared in 1894 in the first Yearbook of Agriculture. That same concern expressed almost a century ago has a familiar ring today.

To introduce "optimal" nutrition practices, it is most important to bring about changes that are in keeping with the established food habits of people, and are acceptable within the framework of their value system.²⁶ This brings forth the controversy of the dietary goals as proposed in 1977 by the congressional select committee on nutrition and human needs. These dietary goals are probably not the final solution. It must be stated that absolute safety cannot be achieved because nothing is absolutely free of risk. While risk is a measure of the probability and severity of harm to human health, safety is a value judgment, based on personal and social experi-

²⁴ Chou and Harmon, op. cit., p. 177.

²⁵ Molitor, op. cit., p. 103.

²⁶ Miriam E. Lowenberg, Neige E. Todhunter, Eva D. Wilson, Jane R. Savage, James L. Lubawski, p. 125.

ences, of the acceptability of risk.²⁷ A substance as harmless as water is safe until one drinks too much in a very short period of time. However, recently nutritionists have acknowledged the dietary goals as a starting point or a priority listing and if nothing else it will stir interest to prove or disprove the theories upon which dietary goals are based.

²⁷ Chou and Harmon, op. cit., p. 33.

Chapter II

DIETARY GOALS

2.1 INTRODUCTION

Nutrition is a relatively new scientific discipline. Although eating habits themselves are hundreds of years old, they are largely based on trial and error or personal preferences, and not on evidence gathered in the laboratory. Modern nutrition began with this century and much remains to be learned.²⁸

In 1968, the American Heart Association (AMA) released eight dietary guidelines. They were:

- reduce animal fat
- decrease saturated fats and increase polyunsaturated fats
- reduce cholesterol
- maintain ideal body weight
- apply dietary recommendations early in life
- maintain the principles of good nutrition with the change in diet
- adhere to dietary recommendations
- make sound food habits a family affair

²⁸ William Beers, "The Food Industry and Nutrition: Challenges and Responsibilities", Nutrition Reviews (suppl. January 1982), p.7.

The revised recommendations to the above made in 1978 included advice to increase complex carbohydrates to compensate for the reduced calories from fat and to reduce sodium intake.²⁹ Interesting enough, Sweden was the first to establish a nutrition policy in 1971. This was followed by Netherlands 1973, Norway 1975, West Germany and Canada 1976 and the United States as late as 1977. It should be noted that the U.S. was lagging even with the strong recommendations presented by the AMA in 1968.³⁰ Prior to 1977, most U.S. public advice regarding diet planning centered around the "Basic Four Food Groups."³¹

2.2 DIETARY GOALS

Dietary Goals for the United States, published in February 1977 and revised in December 1977 are to:

- avoid overweight, consume only as much energy (kilocalories) as is expended; if overweight, decrease energy intake and increase energy expenditure.
- increase the consumption of complex carbohydrates and "naturally occurring" sugars from about 28% of energy intake to about 48% of energy intake.

²⁹ Kristen McNutt, "Dietary Advice to the Public 1957 to 1980", Nutrition Reviews Vol. 36 no. 10 (October 1980), p. 353.

³⁰ Beers, op. cit., p. 8.

³¹ McNutt, op. cit., p. 353.

- reduce the consumption of refined and processed sugars by about 45% to account for about 10% of total energy intake.
- reduce overall fat consumption from approximately 40% to about 30% of energy intake.
- reduce saturated fat consumption to account for about 10% of total energy intake; balance that with polyunsaturated and monounsaturated fats, which should account for about 10% of energy intake each.
- reduce cholesterol consumption to about 300 mg. a day.
- limit the intake of sodium to 2 g. a day or reduce the intake of salt to 5 g. a day.

These goals suggest the following changes in food selection and preparation:

- increase consumption of fruits and vegetables and whole grains.
- decrease consumption of refined and other processed sugars and foods high in such sugars.
- decrease consumption of foods high in total fat, and partially replace saturated fats, whether obtained from animal or vegetable sources, with polyunsaturated fats.
- decrease consumption of animal protein, and choose meats, poultry and fish, which will reduce saturated fat intake.
- except for young children, substitute low-fat and non-fat milk for whole milk, and low-fat dairy products for high fat dairy products.

- decrease consumption of butterfat, eggs, crustaceans, organ meats, and other sources high in cholesterol. Some consideration should be given to easing the cholesterol goal for premenopausal women, young children, and the elderly in order to obtain the nutritional benefits of eggs and liver, etc., in the diet.
- decrease consumption of salt and foods high in salt content.³²

One point of irony when we look at the macronutrient recommendations for protein, fat and carbohydrates over the past approximate 100 years, there has been little recommended change.

PERCENT OF ENERGY INTAKE

| <u>Nutrient</u> | <u>USDA 1895</u> | <u>USDA 1935</u> | <u>CONGRESS 1977</u> |
|-----------------|------------------|------------------|----------------------|
| PROTEIN | 15% | 10-12% | 12% |
| FAT | 35% | 25-35% | 30% |
| CARBOHYDRATE | 55% | 60% | 58% |

Taken from Graham Molitor, "The Food Systems in the 1980's", p. 105.

³² "Dietary Goals for the U.S.", Journal of Nutrition Education Vol. 10 no. 1 (January-March 1978), p. 14.

2.3 PURPOSE

The approach of the goals is public health awareness and is not proposed to retard the onset of degenerative diseases. Each goal will not be beneficial to everyone because there are genetic and other individual differences, but overall results of their adoption would improve public health.³³ Former Assistant Secretary for Health and Surgeon General Julius Richmond said:

Individuals have the right to make informed choices and the government has the responsibility to provide the best data for making good dietary decisions.³⁴

2.4 DIETARY GUIDELINES

In 1980, the U.S. government modified its nutrition policy with the issuance of the "Nutrition and Your Health--Dietary Guidelines for Americans". This report was aimed at achieving variety and moderation in diet. Notable in these recommendations was the absence of target figures for changes in nutrient percentage of calories or total intake of nutrient per day. The dietary guidelines for Americans are:

- eat a variety of foods
- maintain ideal weight

³³ Michael C. Latham, Lani S. Stephenson, "U.S. Dietary Goals", Journal of Nutrition Education Vol. 9 no. 4 (October-November 1977), p. 152.

³⁴ George Bray, "Dietary Guidelines: The Shape of Things to Come", Journal of Nutrition Education Vol. 12 no. 2 (suppl. 1980), p. 97.

- avoid too much fat, saturated fat, and cholesterol
- eat foods with adequate starch and fiber
- avoid too much sugar
- avoid too much sodium
- if you drink alcohol, do so in moderation³⁵

2.5 DIETARY GOALS PROS AND CONS

It is very hard to find in modern textbooks of nutrition the definition of an "optimal" diet. Excluding the statement that the diet should be composed of a variety of foods that protect against deficiency of unknown trace components, and should meet the allowances recommended by the Food and Nutrition Board, little is said about the composition of the "optimal" diet.³⁶ This fact is compounded by the fact that nutrition needs are highly individualized and dependent on a wide range of variables. A representative list of some factors which cause variations in nutritional needs, includes, but is not limited to:

| | |
|------------|------------|
| age | culture |
| sex | clothing |
| height | climate |
| weight | metabolism |
| activity | hormones |
| occupation | enzymes |
| lifestyle | psychology |
| income | diet |

35 Ibid. p. 99.

36 Olson, op. cit., p. 171.

To implement the dietary goals, a very different set of beliefs, attitudes, and eating behavior may be necessary. This diet is the basis for a set of food habits that are expected to be followed for 50 years or so and not just a few months.³⁷ Obviously these dietary goals have been the center of intense controversy as seen in several volumes of testimony before the select committee on nutrition and human needs as well as in nutritional and medical literature.

One problem which complicates the dietary regulation of the degenerative diseases is their multiple etiology. There are many factors besides diet which determine the progression of disease, and these vary widely from individual to individual. Also, changing the diet pattern of the U.S. in the direction of dietary goals with the specific reduction in foods such as meat, eggs, and whole milk may increase deficiencies of protein, iron, vitamin A, calcium, and riboflavin in people who are not at risk from coronary disease.³⁸ In general, the evidence must be very convincing, and the degree of controversy minimal, if advice on health is to be given to the public. It is the opinion of many that the dietary goals meet neither of these criteria.

On the other side of the fence, those advocating dietary goals do not reject the notion that protein, vitamins, and minerals are vital to health. Rather, they suggest a good

³⁷ Eckstein, op. cit., p. 445.

³⁸ Hausman, op. cit., p. 72.

diet is one that limits fat, sodium, kilocalories and cholesterol concomitantly considering Recommended Daily Allowances. They propose that it is necessary to establish a pecking order among hazards so that the most serious dangers could be avoided.³⁹ More important than the exact figures set are the general principles stated in the goals and the whole concept of having goals.

³⁹ Ibid., p. 35.

Chapter III

REVIEW OF NUTRIENTS STUDIED

3.1 CALORIES (OBESITY)

Weight accumulation seems to be the curse of affluence. A report of the President's Biomedical Research panel of 1976 indicated that 1/4 to 1/3 of the American adult population and over 10% of American children are overfat or obese.⁴⁰ For most, weight reduction is desirable for reasons of both health and appearance. While there is no doubt that some genetic basis for body build and weight exists, recent research has suggested that children and particularly infants, are programmed to be fat. Early prevention may save years of dieting.

It has been calculated that in a normal adult the number of cells in the adipose tissue is relatively constant and that increase in adipose mass occurs through an increase in cell size. Obesity resulting in this manner is thought to be the more common type. The other type of obesity characterized by increased numbers of cells in the adipose tissue occurs early in life and is more difficult to control later in life through dietary restrictions.⁴¹ Another factor contributing to this

⁴⁰ Eckstein, op. cit., p. 5.

⁴¹ Joannis S. Scarpa, Helen C. Kiefer, Sourcebook on Food and Nutrition, (Marquis Academic Media, Ill., 1978), p. 192.

cell size theory is the fact that obesity tends to cluster in families. A child risks a 40% chance of being an obese adult if one parent is obese, and this risk increases to 70% if both parents are obese.⁴²

Because excessive gain in weight represents an imbalance between energy intake and energy needs, the straightforward solution to the problem of reducing calories consumed and increasing regular physical exercise may be easier said than done. The efficiency with which the diet is utilized to maintain a constant body weight at any given level of caloric intake varies considerably from person to person. Factors other than overindulgence that may contribute to overfat include:

- metabolism
- genetics
- environmental influences
- social and cultural influences
- psychological factors
- sedentary lifestyle
- behavioral patterns⁴³

An additional fact that too many people ignore or are unaware of is the law of "calorie reversal": with each decade after age 25 one burns 5 to 7% fewer kilocalories.⁴⁴ This translates into the fact that at age 60 one needs about 20% fewer calo-

⁴² Ibid. p. 200.

⁴³ Molitor, op. cit., p. 106.

⁴⁴ Hofman, op. cit., p. 94.

ries than at age 25. While attempting to reduce calorie consumption, it may be necessary to increase the nutrient density (ratio of nutrients to calories) of those foods which are consumed.⁴⁵ This requires a more careful selection of foods to make up a complete diet. The problem of controlling the energy intake presents a number of concerns.

- It is difficult to obtain all the necessary nutrients on an intake of less than 1800 Kcal/day, especially trace minerals.
- It is difficult to limit intake to 1800 Kcal/day or less on a continuing basis. This would require eliminating whole categories of foods such as desserts and snack foods. Thus the foods that are consumed lack richness and sweetness, so have a low satiety value. Also, oral gratification is less because of the small quantities of food ingested. Low calorie foods are available but may be lacking in nutritive value and taste-texture. Additionally, these foods are expensive for one to consume during extended periods of time.
- Limiting kilocalories is a greater problem for women. It has been found that in order to meet nutritional needs, women must consume a diet that is higher in nutrient density than men.⁴⁶

⁴⁵ Chou, Harmon, op. cit., p. 159.

⁴⁶ Eckstein, op. cit., p. 126.

Even determining the necessary weight controls can be a problem when evaluating the degree of obesity because body weight is a poor measure of fatness. Obesity should not be gauged by relative weight. As an example, football players may be overweight but not fat, while office workers could be overfat but not necessarily overweight. Body fatness is more a risk factor than relative body weight.⁴⁷ It has been documented that overweight due to increased fatness is a risk factor for coronary heart disease. Additionally, the percentage increase in early deaths runs in almost direct correlation with the percentage that one is overfat. It has been found that men who are 10% overweight run a 13% risk of early death while an individual 30% overweight risks a 42% chance of an early death. Overweight women, on the other hand, experience a lower risk of an early death when compared to overweight men.⁴⁸ The risk of dying prematurely or having a heart attack appears to increase substantially only at the extreme of being overweight or overfat where men are concerned.

Another link between obesity and heart disease has been hypertension. Findings have indicated that in the absence of hypertension, overweight is not a risk factor. Nonetheless, there is a tendency for persons with high blood pressure to be

⁴⁷ Ancel Keys, "Overweight, Obesity, Coronary Heart Disease and Mortality", Nutrition Reviews, Vol. 38 no. 12 (1980), p. 305.

⁴⁸ Allan G. Cameron, Food Facts and Fallacies, (Faber and Faber Limited, London, 1971), p. 18.

overweight.⁴⁹

Proper weight control is essential when stacked against the consequence of being obese. The method of losing weight must be individualized based on the numerous factors contributing to the weight gained. A recent review of currently existing treatments for obesity concluded that behavior modification is the best method for weight loss and maintenance.

3.2 FAT AND CHOLESTEROL

Since 1900 total fat intake has increased from 32% to over 41%. However, looking at nutrients available per capita per day in terms of contributions, fat from meat, poultry and fish has declined from 37% to 34%. While the contribution from eggs has been relatively constant at 3%, the contribution from dairy products, including butter, has dropped from 42% to 29%. The large increase of fat consumption has been due to a tripling of the intake of vegetable fats and oils.⁵⁰ The amount of fat consumed is most critical of nutrients because it represents 9 calories per gram of fat whereas protein and carbohydrates equate to approximately 4 calories per gram. From this fact there seems to be a great deal of discussion linking fat to a number of degenerative diseases.

⁴⁹ Keys, op. cit., p. 305.

⁵⁰ Chou, Harmon, op. cit., p. 126.

Hypotheses concerning lipids have been applied most intensely to the problem of coronary artery disease, and its underlying arteriosclerosis which is characterized by patchy modular thickenings of the inner walls of the arteries, especially at branch points. At present, approximately 600,000 persons die annually from coronary heart disease and an additional 200,000 from strokes and other complications of atherosclerosis in the U.S.⁵¹ At present, there is no accurate and dependable way to observe atherosclerotic build-ups in the arteries of live human beings. However, serum cholesterol and serum triglyceride levels offer reasonably reliable indications of the overall degree of arteriosclerosis present.⁵²

Additional information from cross-sectional surveys has produced evidence which is consistent with the concept that diets low in fat and cholesterol are more prevalent in populations with low rates of heart attacks and other atherosclerotic diseases. On the other hand, there is no direct evidence, either experimental or observational in human beings, that conclusively demonstrates a causative relationship between dietary fat and human atherosclerotic cardiovascular disease. There are, however, abundant data showing a direct, positive correlation between plasma cholesterol levels and/or with levels of low-density lipoproteins and arteriosclerosis. There are also data showing an inverse relationship between

⁵¹ Chou, Harmon, op. cit., p. 121.

⁵² Robin Hur, Food Reform: Our Desperate Need, (Heidelberg Publishers, Tx, 1975), p. 38.

high-density lipoproteins and the incidence of arteriosclerosis.⁵³ The linkage between dietary fat and coronary heart disease in humans is thus an indirect one.

As previously pointed out, the intake of dietary cholesterol has not changed significantly in the U.S. since 1900. In 1909, the average person consumed 509 mg. of cholesterol per day, whereas, in 1950 the intake was 577 mg. per day, and in 1970, 556 mg. per day. At present, per capita egg consumption in this country is less than one egg per day per capita, which contributes about 200 mg. of cholesterol per day.⁵⁴ Although eggs are a concentrated source of cholesterol, consumption of one egg per day has no effect on circulating blood levels. Increasing effects due to consumption of two to ten eggs per day have been demonstrated.⁵⁵

The vegetable oil manufacturers, on the other hand, are advertising their products as "cholesterol free", as if that were tantamount to "coronary artery disease free". Cholesterol has served as a convenient scapegoat because it appeals to our futile desire for every effect to be the result of a single cause. With an intake of 500 mg./day, and an absorption rate in man of 40%, only 200 mg. enters the body and mixes with the endogenous pool. Sensitive feedback mechanisms in the liver retard the synthesis rate so that the body pool of

⁵³ Bray, op. cit., p. 97.

⁵⁴ Chou, Harmon, op. cit., p. 126.

⁵⁵ Eckstein, op. cit., p. 78.

cholesterol remains constant. In most individuals cholesterol intake in the range of 300 - 800 mg./day has no effect on the serum cholesterol.⁵⁶ This presents the problem of identifying the "optimum" or "normal" levels of cholesterol to minimize the risk of coronary heart disease.

Sharply divided opinions cast uncertainty on possible health risks associated with "excessive" consumption of saturated fat and cholesterol. In light of all the evidence relating to plaque formation, it seems more than likely that dietary fat and possibly cholesterol are among the contributing factors in atherosclerosis. Thus limiting fat consumption should do no harm, and it may be beneficial. But cutting back on fat to meet the dietary goals may limit the diet in flavor, variety, and fat-soluble vitamin content. Additionally, to follow the guidelines, one needs good information about the type of fat and amount of fat in foods. Unfortunately, information regarding the type of fat in foods is not readily available. The Food and Drug Administration presently lacks the authority to require this information on food labels.⁵⁷ It can be concluded that the implementation of dietary changes (as per dietary goals) in large populations carries with them some degree of risk, however small. These risks may be due to changes in food processing, purchasing and/or to the possible hazards for individuals whose present diet is marginally ade-

⁵⁶ Chou, Harmon, op. cit., p. 126.

⁵⁷ Hausman, op. cit., p. 122.

quate regarding vitamins, minerals and protein.⁵⁸

3.3 SODIUM

The dietary goals recommend the reduction of salt intake. The actual concern is the sodium in the salt which by molecular weight is approximately 40% of the chemical compound sodium chloride (salt). Five grams of salt/day which equal approximately 1 teaspoon would thus equal 2 grams of sodium/day.

Sodium in all forms has been implicated as having a major, although not yet well understood, role in hypertension. Evidence used to support the argument that excessive sodium ingestion in some way predisposes susceptible people to high blood pressure includes the following points:

- In the laboratory, high sodium diets produce accelerated hypertension in rats under specific experimental conditions.
- Throughout the world, populations with excessive salt and/or sodium intake have a higher prevalence of hypertension than those with low sodium intake.
- Reducing sodium ingestion from excessive to moderate amounts in diets of hypertensive individuals produces a favorable blood pressure response in some cases.⁵⁹

⁵⁸ Bray, op. cit., p. 98.

⁵⁹ Scarpa, Kiefer, op. cit., p. 316.

These data cannot be interpreted to document that excessive sodium or salt cause hypertension in the population at large.

High blood pressure, though, does affect 20-30% of the American adult population.⁶⁰ If sodium is a factor, the problem is compounded due to the fact that at least 70% of the sodium intake in the U.S. comes from canned, processed foods, convenience foods and baked goods and not from salt added by the salt shaker.⁶¹ This is illustrated through the processing steps of the following:

| <u>Food Item</u> | <u>Na (mg/100 g)</u> |
|------------------|----------------------|
| sweet corn | trace |
| canned corn | 236 |
| corn flakes | 1005 |
| baked potato | 4 |
| potato salad | 528 |
| potato chips | 1000 |
| sliced tomato | 3 |
| canned tomato | 130 |
| tomato catsup | 1042 |

⁶⁰ Robert W. Cullen, Audrey Paulbitski, Susan M. Oace, "Sodium, Hypertension, and the U.S. Dietary Goals", Journal of Nutrition Education, Vol. 10 no. 2 (April-June 1978), p. 59.

⁶¹ A. M. Altschul, J. K. Grommet, "Sodium Intake and Sodium Sensitivity", Nutrition Reviews, Vol. 38 no. 12 (1980), p. 399.

It has been reported that only 10% of the sodium intake may be a direct result of individuals salting their food. The salt shaker thus may not make a serious difference in total sodium intake of an individual. Yet, this "typical" sodium intake can prove to be a burden for those individuals exhibiting a physiological deficiency in the ability to handle sodium.

Whatever its etiology, the results of hypertension can shorten one's life. A 35-year-old American man with a blood pressure 14% above normal for his age has reduced his life expectancy by nine years. Similarly, a 45-year-old having a blood pressure 17% above normal runs twice the risk of a heart attack and four times the risk of a stroke than a man with normal blood pressure.⁶²

In nearly all cases the actual cause of hypertension is unknown, but it is not generally accepted as being a nutrition problem. An article cited in the dietary goals report in support of the recommendation to reduce salt intake concluded that the disease is of complex etiology with evidence of genetic susceptibility. It stated that a high salt intake increases blood pressure in some but not in others, and a low salt intake lowers high blood pressure in some but not in others. Control of salt intake is only an adjunct to drug treatment of hypertension and weight loss.⁶³

62 Scarpa, Kiefer, op. cit., p. 22.

63 Latham, Stephenson, op. cit., p. 155.

There is evidence from clustering of blood pressure in humans to suggest that genetics has an important role in determining blood pressure. In the majority of nonhypertensive individuals, an intake of as much as 17 grams of salt per day will not induce hypertension. In contrast, the minority that do develop hypertension appear to have a genetically determined susceptibility to salt loading and manifest the disease on intakes of 7 to 14 grams per day.⁶⁴ Many authorities now agree that low sodium intake lowers blood pressure in most hypertensive patients.

The dietary goal of restricting salt intake may benefit persons with high blood pressure and may reduce the incidence of hypertension among persons with genetic predisposition for the disorder. This goal is achievable without extraordinary diet modification by eliminating added salt and excessively salty processed foods and condiments. Yet this recommended level of salt intake might be inadequate for persons engaged in heavy exercise or living in high environmental temperature but would be adequate for most individuals.⁶⁵

At best, it is difficult to alter dietary tastes. A good beginning is educating individuals as to what foods are high in sodium, how to read labels and how to develop innovative menus. This positive approach allows one to readjust his/her eating habits and modify the sodium intake if one so desires.

⁶⁴ Bray, op. cit., p. 99.

⁶⁵ Cullen, Paulbitski, Oace, op. cit., p. 59.

Chapter IV

UNITED STATES AIR FORCE MENU PLANNING

4.1 INTRODUCTION

The USAF prepares and publishes a 42-day cycle menu that is used worldwide at all its installations. In order to properly study this menu it is important to understand the customer we are attempting to satisfy and the manner in which these meals are prepared and served.

The clientele fed in any given Air Force dining facility is but one member of a diverse group and the following must be considered:

- geographic and/or sociocultural background
- age
- activities (work and pleasure)
- sex

As previously highlighted, Air Force members come from all points on the globe with varying social and cultural backgrounds. These same individuals are then stationed at different locations throughout the world exposing them yet to additional cultural elements. All of these variables must be considered when attempting to satisfy service personnel. Food that is prepared and served in Air Force dining facilities is definitely an important factor in determining the morale of individuals with such diverse backgrounds.

The second factor that influences the eating habits of these individuals is their age. Age ranges from teenagers to persons in their late forties. The average age would be close to the mid-twenties.

Another variable to the menu equation is the energy spent on the job that must be replaced through adequate food intake. The jobs in the Air Force span the full spectrum of activity from clerical to heavy maintenance. These activities and energy expenditure are further complicated depending on where this activity is accomplished, i.e., Iceland or Spain, with extreme differences in climates. The Air Force as a whole has a majority of its members working in light activity jobs resulting in a more sedentary life-style.

A fourth factor that has a bearing on the menu planning process is the increased number of women entering the Air Force. The nutritional needs for men and women are different in such areas as minerals and calories. The menu has to provide the proper nutritional elements for both sexes.

These are but just a few of the major variables that must go into the menu plan. A second set of variables deals with the specific dining facilities designed to support different segments of the Air Force mission--for example, missions ranging from piloting to fire fighting. However, meals for each specific assignment are derived from the Worldwide Menu.

The main dining facility serves the general working population on any given installation. The meals served may include

short order, carryout, specialty (ethnic), all being part of breakfast, lunch or dinner. Most diners are made up of airmen living in dormitories whose source of meals are provided through the dining hall. A second group are those individuals who reside off the installation and eat their midday meal at the dining hall but eat other meals at home.

The alert facility dining hall is much smaller than the main dining facility with an altogether different clientele. This facility serves aircrew members who are restricted to this controlled area for a given period of time. In addition to being a captive audience they also are restricted to specific diets for aircrews, i.e., no gaseous foods. This may require some modifying of the Worldwide Menu but in most cases it is minimal.

Additionally, most installations have a fire station that supports the flightline in case of an air emergency. Within this facility there is a small dining area to provide meals to the fire personnel who usually are restricted to the facility for twenty-four hours. The personnel performing this duty are mostly men in their 30's and 40's whose activity is minimal unless there is an emergency.

The USAF Worldwide Menu has evolved over the years based on inputs from the local dining facilities to satisfy the numerous variables mentioned. Additionally, menus are modified according to changing food service equipment and processing and to incorporate new food items.

4.2 MENU PREPARATION

The USAF Worldwide Menu is a 42-day cycle which is published three times a year, January through April, May through August, and September through December. When prepared, cost and nutrition are the two major constraints in menu planning. The published menu must meet the nutritional standards of the Air Force Regulation (AFR) 160-95. This document is presently under revision with recommendations for it to follow the dietary goals. Besides meeting specified nutritional standards, the menu must fall within the cost of the basic daily food cost allowance which is computed monthly using current wholesale food prices.

The cyclical menus are centrally developed from an annual food plan which is programmed 18 months prior to the calendar year. This annual food plan allows one to program the number of servings for each month. A nutritional analysis is computed on the food plan to ensure it meets the Recommended Daily Allowances as specified by AFR 160-95. The nutritional data base is derived from the United States Department of Agriculture Handbook Number 8, for comparison with the Recommended Daily Allowances. Since the daily menus are developed from the annual food plan which has been prepared to meet the nutritional standards, it is assumed that the daily menus meet the same standards. Once the menus are prepared, they are distributed to the local dining facilities six months prior to the first month of use to allow for any local modifications as a result of many variables previously mentioned.

4.3 MENU COMPONENTS

The menu covers the three basic meals: breakfast, lunch, and dinner plus a short order menu. It also provides guidelines for modified meals, specialty meals, and a brunch menu.

The breakfast menu consists of a choice of two juices and one fruit selection (fresh, canned or frozen) eggs to order, ready to eat or cooked cereal, choice of two breakfast meats, pastry, assorted breads, and beverages.

The lunch and dinner menus consist of a soup, a choice of three entrees, two potatoes or starch substitutes, three vegetables, three to five salads, one hot bread plus assorted other breads, three to five desserts, and beverages.

The short order menu is a standard menu with hamburgers, cheeseburgers, frankfurters, peanut butter and jelly sandwiches, and chili con carne. In addition, this menu features one special sandwich of the day, french fried potatoes, potato chips, and the same soup, salads, and desserts as the lunch or dinner menus.

The dining facilities have no obligation to serve special diets but are encouraged to prepare modified meals. Kilocalorie-restricted meals are noted on the menu to indicate items suitable for a Sensible Limited Intake Menu (SLIM) which provides 1500 calories per day when followed. A second modification is the recommendation of a vegetarian meal if needed or on customer demand. The menu is also designed to always provide a meat entree to satisfy those who do not consume pork.

Specialty meals are offered in each menu cycle. These include foods of ethnic and geographical origin as well as holiday meal trimmings which are added to the variety offered dining hall customers.

A brunch is normally offered on weekends. This combines the characteristic foods of breakfast and lunch.

The cycle menu provides variety for the patron through its different menus. To promote reliability of products (menu items), Standard Armed Forces Recipes are used in the preparation of each menu item.

All the variables to the menu-planning equation have been addressed to produce the final menus. The purpose of the current research is to recheck some nutritional computations to see what other standards the menus may satisfy.

Chapter V

AIR FORCE MENU STUDY

5.1 METHODOLOGY

The menu study was performed using the USAF Worldwide Menu, Air Force Pamphlet (AFP) 146-17. For evaluation purposes, this 42-day cycle menu was divided into six seven-day sections and from each section one day's menus were randomly selected. The four basic menus of breakfast, lunch, short order, and dinner for each of these six days were checked for kilocalories, fat, cholesterol and sodium. These daily intake totals for each of the nutrients were then compared to the dietary goals advocated by the United States government.

Because these meals are served cafeteria style allowing the diner free choice of selection, parameters had to be established. To make the evaluation comparisons, sample menu selections were grouped so one menu would represent the "worse" combination for a day while a second grouping provided the "best" combination for the same day. This worst and best menu approach provided a range that the four nutrient values might occupy on any given day. It could be assumed that another menu grouping would fall within this range.

The first premise used in selecting the best or worst menu item was the number of kilocalories supplied by the item. If

two items had high caloric values that were almost equal, the percentage of fat from total kilocalories would determine which item would be used in the worst menu scenario. If the amount of fat was close, cholesterol was the determining factor with sodium being the last selection criterion used.

This selection process did not take into consideration values for vitamins, minerals, proteins, and carbohydrates contained in the various menu components. As an example it appeared to be a better choice to select coffee, tea or even soda over milk because they each have less calories than milk. However, milk does contain other very important vitamins and minerals not found in the other beverages, making it an overall better nutritional choice. This would be an extreme as the best and worst menu selection did include on a daily basis the basic four.

After the items were chosen from the menu, selected nutrient composition was determined by using Air Force Standardized Recipes, Air Force Manual (AFM) 146-12. Kilocalorie and fat composition of the recipes were computed using the table of food composition from the Home and Garden Bulletin number 72 published by the U.S. Department of Agriculture (USDA). Cholesterol values were taken from USDA Handbook 8. Sodium content was derived from the USDA Home and Garden Bulletin number 233 published by the U.S. Department of Agriculture. This analysis determined if the customer could comply with the dietary goals using the menu items chosen.

The following assumptions were made:

- customers ate all three meals in the Air Force dining hall.
- customers added very small amounts of additional ingredients to the item once it was served.
- serving sizes for food and beverage items were in compliance to the Air Force Standardized Recipes.
- nothing was added to the food by the kitchen staff other than what was called for in the standardized recipes.
- customers maintained a somewhat sedentary life style.
- Air Force dining halls did not use low-fat cottage cheese, or other dairy products.
- customers possessed a basic understanding of nutrition and would consume food or beverage items that were low in kilocalories, fat, cholesterol and sodium.

5.2 RESULTS

One could suggest that from the results of this research an Air Force member dining in an Air Force dining hall can obtain a diet low in calories, fat, cholesterol and sodium as illustrated by the tables at the end of the chapter. By showing the best and worst menu combinations, it is apparent that some responsibility must rest with the customer in selecting the meal components. This, of course, requires the diner to understand food composition and nutrition.

Although the sample size of six out of forty-two days is small, the calculated values of the four nutrients showed very little variation among the six days computed. Consequently, the results of this research are thought to be indicative of what one would expect to find in any given day of the 42-day cycle menu.

A summary and discussion of the computed results with proposed recommendations will be outlined in the next chapter.

Following are the amounts of kilocalories, grams of fat, and milligrams of cholesterol and sodium for each of 4 menus found in each of 6 randomly selected days from the 42-cycle. To find a particular day's menu selection and its worst or best menu combination, the following pages denoted:

| | |
|--------------------------------------|-------------|
| Day 1 menus | pages 42-45 |
| Day 1 worst and best menus | pages 46-50 |
| Day 2 menus | pages 51-54 |
| Day 2 worst and best menus | pages 55-59 |
| Day 3 menus | pages 60-63 |
| Day 3 worst and best menus | pages 64-68 |
| Day 4 menus | pages 69-72 |
| Day 4 worst and best menus | pages 73-77 |
| Day 5 menus | pages 78-81 |
| Day 5 worst and best menus | pages 82-86 |
| Day 6 menus | pages 87-90 |
| Day 6 worst and best menus | pages 91-95 |

5.2.1 Day 1, Nutritional Calculations

| BREAKFAST | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|--------------|-------------------|------------|--------------------|---------------|---------|
| ORANGE JUICE | 120 | TRACE | -- | 5 | 8 oz. * |
| COLD CEREAL | 105 | 1 | -- | 225 | 2/3 cup |
| HOT CEREAL | 130 | 2 | -- | 283 | 3/4 cup |
| PANCAKES | 110 | 4 | -- | 304 | 2 ea. |
| FRENCH TOAST | 225 | -- | -- | 217 | 2 ea. |
| WAFFLES | 205 | 8 | -- | 550 | 1 ea. |
| EGGS | 170 | 12 | 550 | 118 | 2 ea. |
| TOAST | 65 | 1 | -- | 79 | 1 ea. |
| MARGARINE | 70 | 8 | 24 | 95 | 2 pats |
| JELLY | 40 | TRACE | -- | 3 | 1 oz. |
| SYRUP | 180 | 2 | -- | 40 | 2 oz.** |
| COFFEE | -- | -- | -- | 2 | 5 oz.** |
| TEA | -- | -- | -- | 1 | 5 oz. |
| MILK | 150 | 8 | 25 | 122 | 8 oz. |

ADDITIONAL NONSTANDARD ITEMS

| | | | | | |
|-----------------|-----|-------|----|------|----------|
| VEGETABLE JUICE | 45 | TRACE | -- | 887 | 8 oz. |
| FRESH PEAR | 100 | 1 | -- | 1 | 1 ea. |
| BACON | 85 | 8 | 70 | 274 | 2 slices |
| CORN BEEF HASH | 264 | 17 | 70 | 1003 | 2/3 cup |
| RAISIN MUFFINS | 260 | 8 | -- | 238 | 2 ea. |

Menu extracted from AFP 146-17, May - August 1982, Day 3

*without milk

**without cream or sugar

Day 1

| LUNCH SHORT ORDER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|-----------------------------------|-------------------|----------------|--------------------|---------------|-------------------------|
| HOT DOG W/ ROLL | 290 | 15 | 40 | 728 | 2 oz./1.5 oz. |
| HAMBURGER W/ ROLL | 355 | 19 | 70 | 461 | 3.5 oz./2 oz. |
| CHEESEBURGER W/ ROLL | 460 | 28 | 94 | 709 | 3.5 oz./2 oz. |
| PEANUT BUTTER & JELLY SANDWICH | 285 | 9 | -- | 242 | 1 ea. |
| CHILE CON CARNE WITH ROLL | 460 | 18 | 70 | 1552 | 1 1/4 cup 2 oz. roll |
| RELISH | 20 | TRACE | -- | 124 | 1 oz. |
| FRIED ONIONS | 70 | 7 | -- | 2 | 1/4 cup |
| FRENCH FRIES | 135 | 7 | -- | 146 | 1 cup |
| POTATO CHIPS | 115 | 8 | -- | 200 | 1/2 oz. |
| SODA | 145 | 0 | -- | 20 | 8 oz. |
| MILK | | | | | |
| WHITE | 150 | 8 | 25 | 122 | 8 oz. |
| CHOCOLATE | 210 | 8 | 25 | 149 | 8 oz. |
| SKIM | 100 | TRACE | TRACE | | 8 oz. |
| COLD PLATTER | | | | | |
| BOLOGNA | 85 | 8 | 20 | 220 | 1 slice |
| HAM | 175 | 15 | 20 | 288 | 1 slice |
| AMERICAN CHEESE | 105 | 9 | 24 | 406 | 1 oz. |
| LETTUCE & TOMATO | 15 | TRACE | -- | -- | |
| POTATO SALAD | 125 | 4 | -- | 625 | 4 oz. |
| SALAD SELECTION | | SEE LUNCH MENU | | | |
| SALAD DRESSING | | | | | |
| REGULAR | 150 | 16 | -- | 300 | 1 oz. |
| LOW KILOCALORIE | 40 | 4 | -- | 300 | 1 oz. |
| DESSERT SELECTION | | SEE LUNCH MENU | | | |

Day 1

| LUNCH | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|-------------------------------------|-------------------|------------|--------------------|---------------|----------------------|
| BEEF RICE SOUP | 65 | 3 | -- | 952 | 1 cup |
| PORK CHOPS W/ SLICED APPLES | 321 | 25 | 70 | 79 | 4 oz. 1 oz. |
| TURKEY A LA KING | 470 | 34 | -- | 662 | 1 cup |
| STUFFED CABBAGE | 485 | 34 | 70 | 63 | 2 rolls |
| STEAMED RICE | 116 | TRACE | -- | 2 | 5 oz. |
| LYONNAISE POTATOES | 90 | TRACE | -- | 5 | 1 potato |
| PEAS W/ MUSHROOMS | 52 | TRACE | -- | 240 | 4 oz. |
| GREEN BEANS | 17 | TRACE | -- | 4 | 4 oz. |
| CORN ON THE COB | 120 | 1 | -- | 1 | 1 cob |
| TOSSVED VEG SALAD | 21 | TRACE | -- | 11 | 1 cup |
| COTTAGE CHEESE W/ PEACH | 55 | 2 | 15 | 228 | 1/4 cup 1/2 peach |
| PINEAPPLE COLE SLAW | 98 | 6 | -- | 1 | 1/2 cup |
| MIXED FRUIT | 82 | TRACE | -- | 3 | 1/2 cup |
| TOASTED HERB BREAD | 150 | 2 | -- | 158 | 2 slices |
| ASSORTED BREAD | 130 | 2 | -- | 158 | 2 slices |
| GINGERBREAD CAKE W/ LEMON SAUCE | 265 | 5 | -- | 242 | 1/9 8" cake |
| PINEAPPLE PIE | 345 | 15 | -- | 169 | 1/6 9" pie |
| COCONUT PUDDING W/ LEMON COOKIES | 160 | 4 | -- | 445 | 1/2 cup |
| MILK WHITE | 50 | 1 | -- | 216 | 2 cookies |
| CHOCOLATE | 150 | 8 | 25 | 122 | 8 oz. |
| SKIM | 210 | 8 | 25 | 149 | 8 oz. |
| SODA | 100 | TRACE | TRACE | 8 oz. | |
| TEA | 145 | -- | -- | 20 | 8 oz.* |
| COFFEE | -- | -- | -- | 1 | 5 oz.* |
| SALAD DRESSING REGULAR | -- | -- | -- | 2 | 5 oz. |
| LOW KILOCALORIE | 150 | 16 | -- | 300 | 1 oz. |
| | 40 | 4 | -- | 300 | 1 oz. |

* without cream or sugar.

Day 1

| DINNER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|----------------------------------|-------------------|------------|--------------------|---------------|-----------------------|
| CHICKEN NOODLE SOUP | 55 | 1 | -- | 1107 | 1 cup |
| ROAST VEAL W/ GRAVY | 307 | 19 | 90 | 92 | 4 oz. |
| SPAGHETTI W/ MEAT SAUCE | 38 | 3 | -- | 13 | 1 oz. |
| BAKED CHICKEN | 330 | 12 | 70 | 930 | 1 cup |
| CRANBERRY SAUCE | 120 | 4 | 60 | 69 | 2/3 cup |
| MASHED POTATOES | 100 | TRACE | -- | 19 | 1/4 chicken |
| SWEET POTATOES | 129 | 5 | -- | 485 | 2 oz. |
| SPINACH | 138 | TRACE | -- | 20 | 2/3 cup |
| ASPARAGUS AU GRATIN | 11 | TRACE | -- | 65 | 4 oz. |
| MIXED VEGETABLES | 170 | TRACE | -- | 532 | 4 oz. |
| TOSSSED VEG SALAD | 57 | TRACE | -- | 45 | 1/2 oz. cheese |
| JELLIED CRANBERRY & ORANGE SALAD | 21 | TRACE | -- | 11 | 1 cup |
| CUCUMBER, ONION & PEPPER SALAD | 35 | TRACE | -- | TRACE | 5 x 7 x 2 1/2" square |
| COTTAGE CHEESE | 32 | TRACE | -- | 8 | 1/2 cup |
| DINNER ROLLS | 55 | 2 | 15 | 228 | 1/4 cup |
| ASSORTED BREAD | 170 | 4 | -- | 276 | 2 ea. |
| WHITE CAKE W/ CHOC. ICING | 130 | 2 | -- | 158 | 2 slices |
| RAISIN PIE | 250 | 8 | -- | 242 | 1/3 9" cake |
| FRUIT CUP | 365 | 16 | -- | 258 | 1/6 9" pie |
| MARGARINE | 98 | TRACE | -- | 7 | 1/2 cup |
| MILK | 70 | 8 | 24 | 95 | 2 pats |
| WHITE | 150 | 8 | 25 | 122 | 8 oz. |
| CHOCOLATE | 210 | 8 | 25 | 149 | 8 oz. |
| SKIM | 100 | TRACE | TRACE | 8 | 8 oz. |
| SODA | 145 | -- | -- | 20 | 8 oz.* |
| TEA | -- | -- | -- | 1 | 5 oz.* |
| COFFEE | -- | -- | -- | 2 | 5 oz. |
| SALAD DRESSING | 150 | 16 | -- | 300 | 1 oz. |
| REGULAR | 40 | 4 | -- | 300 | 1 oz. |
| LOW KILOCALORIE | | | | | |

* without cream or sugar

Day 1

| BREAKFAST | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|-----------|-------------------|------------|--------------------|---------------|
|-----------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|----------------------------|------------|----------|-----------|------------|
| ORANGE JUICE | 120 | TRACE | -- | 5 |
| EGGS | 170 | 12 | 550 | 118 |
| CORN BEEF HASH | 264 | 17 | 70 | 1003 |
| RAISIN MUFFINS | 260 | 8 | -- | 238 |
| MARGARINE | 70 | 8 | 24 | 95 |
| HOT CEREAL | 130 | 2 | -- | 283 |
| MILK (WHITE) | <u>150</u> | <u>8</u> | <u>25</u> | <u>122</u> |
| TOTAL | 1164 | 55 | 669 | 1864 |
| FAT % OF TOTAL CALORIES | | 42.5 | | |

BEST COMBINATION

| | | | | |
|----------------------------|-----------|----------|-----------|-----------|
| FRESH PEAR | 100 | 1 | -- | 1 |
| COLD CEREAL | 105 | 1 | -- | 225 |
| RAISIN MUFFINS | 260 | 8 | -- | 238 |
| MILK | 150 | 8 | 25 | 122 |
| TEA | -- | -- | -- | 2 |
| MARGARINE | <u>70</u> | <u>8</u> | <u>24</u> | <u>95</u> |
| TOTAL | 685 | 26 | 49 | 683 |
| FAT % OF TOTAL CALORIES | | 34 | | |

Day 1

| LUNCH SHORT ORDER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|----------------------|-------------------|------------|--------------------|---------------|
|----------------------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|---------------------------------|-------------|-----------|-----------|-------------|
| COLD PLATTER | 505 | 36 | 64 | 1539 |
| POTATO CHIPS | 115 | 8 | -- | 200 |
| TOSSED VEG SALAD W/ DRESSING | 21 | TRACE | -- | 11 |
| | 150 | 16 | -- | 300 |
| PINEAPPLE PIE | 345 | 15 | -- | 169 |
| MILK (WHITE) | 150 | 8 | 25 | 122 |
| TOTAL | 1286 | 83 | 89 | 2341 |

FAT % OF TOTAL
CALORIES

BEST COMBINATION

| | | | | |
|-------------------------------------|------------|-----------|-----------|-------------|
| PEANUT BUTTER & JELLY SANDWICH | 285 | 9 | -- | 242 |
| FRIED ONIONS | 70 | 7 | -- | 2 |
| COTTAGE CHEESE W/ PEACH | 55 | 2 | 15 | 228 |
| | 20 | -- | -- | 4 |
| COCONUT PUDDING W/ *LEMON COOKIE | 210 | 5 | -- | 661 |
| MILK | 150 | 8 | 25 | 122 |
| TOTAL | 790 | 31 | 40 | 1251 |

FAT % OF TOTAL
CALORIES

* Milk was used because of its total nutritional values as mentioned in the methodology section.

Day 1

| LUNCH | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|-------|-------------------|------------|--------------------|---------------|
|-------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|---------------------------------|-----------|--------|---------|----------|
| BEEF RICE SOUP | 65 | 3 | -- | 952 |
| STUFFED CABBAGE | 485 | 34 | 70 | 63 |
| RICE | 116 | TRACE | -- | 2 |
| CORN ON THE COB | 120 | 1 | -- | 1 |
| TOSSED VEG SALAD W/ DRESSING | 21 150 | 1 8 | -- | 1 300 |
| HERB BREAD | 150 | 2 | -- | 158 |
| MARGARINE | 70 | 8 | 24 | 95 |
| PINEAPPLE PIE | 345 | 15 | -- | 169 |
| MILK (CHOC.) | 210 | 8 | 25 | 149 |
| TOTAL | 1732 | 80 | 119 | 1890 |

FAT % OF TOTAL
CALORIES

BEST COMBINATION

| | | | | |
|-------------------------------------|---------|--------|--------|----------|
| PORK CHOP W/ APPLE RING | 321 | 25 | 70 | 79 |
| LYONNAISE POTATOES | 90 | TRACE | -- | 5 |
| GREEN BEANS | 17 | TRACE | -- | 4 |
| MIXED FRUIT | 82 | TRACE | -- | 3 |
| ASSORTED BREAD | 130 | 2 | -- | 158 |
| MARGARINE | 70 | 8 | 24 | 95 |
| COCONUT PUDDING W/ LEMON COOKIES | 210 | 1 | -- | 661 |
| TEA | -- | -- | -- | 2 |
| TOTAL | 920 | 36 | 94 | 1007 |

FAT % OF TOTAL
CALORIES

Day 1

| DINNER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|--------|-------------------|------------|--------------------|---------------|
|--------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|--------------------------------|-------------|-----------|------------|-------------|
| CHICKEN NOODLE SOUP | 55 | 1 | -- | 1107 |
| ROAST VEAL W/ GRAVY | 345 | 22 | 90 | 105 |
| MASHED POTATOES | 129 | 5 | -- | 485 |
| MIXED VEGETABLES | 57 | TRACE | -- | 45 |
| TOSSED VEG SALAD W/ DRESSING | 21 | TRACE | -- | 11 |
| DINNER ROLLS | 150 | 16 | -- | 300 |
| MARGARINE | 170 | 4 | -- | 276 |
| RAISIN PIE | 70 | 8 | 24 | 95 |
| MILK (CHOC) | 365 | 16 | -- | 258 |
| | <u>210</u> | <u>8</u> | <u>25</u> | <u>149</u> |
| TOTAL | 1572 | 80 | 139 | 2831 |
| FAT % OF TOTAL CALORIES | | | 45 | |

BEST COMBINATION

| | | | | |
|----------------------------------|------------|-----------|------------|------------|
| BAKED CHICKEN W/ CRANBERRY SAUCE | 220 | 4 | 60 | 88 |
| SWEET POTATOES | 138 | TRACE | -- | 20 |
| SPINACH | 11 | TRACE | -- | 65 |
| CUCUMBER, ONION & PEPPER SALAD | 32 | TRACE | -- | 8 |
| ASSORTED BREADS | 130 | 2 | -- | 158 |
| MARGARINE | 70 | 8 | 24 | 95 |
| FRUIT CUP | 98 | TRACE | -- | 7 |
| MILK | 150 | 8 | 25 | 122 |
| TOTAL | 849 | 22 | 109 | 563 |
| FAT % OF TOTAL CALORIES | | | 23 | |

Day 1

| DAILY RESULTS | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|---------------|-------------------|------------|--------------------|---------------|
|---------------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|----------------------------|-------------|-----------|------------|-------------|
| BREAKFAST | 1164 | 55 | 669 | 1864 |
| LUNCH | 1732 | 80 | 119 | 1890 |
| DINNER | <u>1572</u> | <u>80</u> | <u>139</u> | <u>2831</u> |
| TOTAL | 4468 | 215 | 927 | 6585 |
| FAT % OF TOTAL CALORIES | | 43 | | |

BEST COMBINATION

| | | | | |
|----------------------------|------------|-----------|------------|------------|
| BREAKFAST | 685 | 26 | 49 | 683 |
| LUNCH | 790 | 31 | 40 | 1251 |
| DINNER | <u>849</u> | <u>22</u> | <u>109</u> | <u>563</u> |
| TOTAL | 2324 | 79 | 298 | 2497 |
| FAT % OF TOTAL CALORIES | | 30.6 | | |

| | | | | |
|------------------------------|--------|-----|-----|------|
| RECOMMENDED DIETARY GOALS | 2700* | 30% | 300 | 2000 |
| | 2000** | | | |

* Calories for men 23 - 50 years old

** Calories for women 23 - 50 years old

National Academy of Science, "Recommended Dietary Allowances,"
(Federal printing office, ninth edition, 1980, Washington, D.C.),
p. 23.

5.2.2 Day 2, Nutritional Calculations

| BREAKFAST | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|--------------|-------------------|------------|--------------------|---------------|----------|
| ORANGE JUICE | 120 | TRACE | -- | 5 | 8 oz. |
| COLD CEREAL | 105 | 1 | -- | 225 | 2/3 cup* |
| HOT CEREAL | 130 | 2 | -- | 283 | 3/4 cup |
| PANCAKES | 110 | 4 | -- | 304 | 2 ea. |
| FRENCH TOAST | 225 | -- | -- | 217 | 2 ea. |
| WAFFLES | 205 | 8 | -- | 550 | 1 ea. |
| EGGS | 170 | 12 | 550 | 118 | 2 ea. |
| TOAST | 65 | 1 | -- | 79 | 1 ea. |
| MARGARINE | 70 | 8 | 24 | 95 | 2 pats |
| JELLY | 40 | TRACE | -- | 3 | 1 oz. |
| SYRUP | 180 | 2 | -- | 40 | 2 oz.** |
| COFFEE | -- | -- | -- | 2 | 5 oz.** |
| TEA | -- | -- | -- | 1 | 5 oz. |
| MILK | 150 | 8 | 25 | 122 | 8 oz. |

ADDITIONAL NONSTANDARD ITEMS

| | | | | | |
|-----------------|-----|-------|----|-----|----------|
| VEGETABLE JUICE | 45 | TRACE | -- | 887 | 8 oz. |
| HALF GRAPEFRUIT | 95 | TRACE | -- | 1 | |
| BACON | 85 | 8 | 70 | 274 | 2 slices |
| MINCED BEEF | 140 | 5 | 40 | 55 | 2 oz. |
| PECAN ROLLS | 562 | 32 | -- | 236 | 2 rolls |

Menu extracted from AFP 146-17, May - August 1982, Day 11

* without milk

** without cream or sugar

Day 2

| LUNCH SHORT ORDER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|-----------------------------------|-------------------|------------|--------------------|---------------|--------------------|
| HOT DOG W/ ROLL | 290 | 15 | 40 | 728 | 2 oz./1.5 oz. |
| HAMBURGER W/ ROLL | 355 | 19 | 70 | 461 | 3.5 oz./2 oz. |
| CHEESEBURGER W/ ROLL | 460 | 28 | 94 | 709 | 3.5 oz./2 oz. |
| PEANUT BUTTER & JELLY SANDWICH | 285 | 9 | -- | 242 | 1 ea. |
| CHILE CON CARNE WITH ROLL | 460 | 18 | 70 | 1552 | 1 1/4 cup 2 oz. |
| RELISH | 20 | TRACE | -- | 124 | 1 oz. |
| FRIED ONIONS | 70 | 7 | -- | 2 | 1/4 cup |
| FRENCH FRIES | 135 | 7 | -- | 146 | 1 cup |
| POTATO CHIPS | 115 | 8 | -- | 200 | 1/2 oz. |
| SODA | 145 | 0 | -- | 20 | 8 oz. |
| MILK | | | | | |
| WHITE | 150 | 8 | 25 | 122 | 8 oz. |
| CHOCOLATE | 210 | 8 | 25 | 149 | 8 oz. |
| SKIM | 100 | TRACE | TRACE | | 8 oz. |
| SUBMARINE SANDWICH | | | | | |
| BOLOGNA | 85 | 8 | 20 | 220 | 1 slice |
| HAM | 175 | 15 | 20 | 228 | 1 slice |
| SALAMI | 90 | 7 | 20 | 255 | 1 slice |
| CHEDDAR CHEESE | 115 | 9 | 29 | 176 | 1 oz. |
| SWISS CHEESE | 105 | 8 | 24 | 74 | 1 oz. |
| FRENCH BREAD | 328 | 3 | -- | 232 | 4 oz. |
| DRESSING | 100 | 11 | -- | 78 | 1/3 oz. |
| SALAD SELECTION | | | SEE LUNCH MENU | | |
| SALAD DRESSING | | | | | |
| REGULAR | 150 | 16 | -- | 300 | 1 oz. |
| LOW KILOCALORIE | 40 | 4 | -- | 300 | 1 oz. |
| DESSERT SELECTION | | | SEE LUNCH MENU | | |

Day 2

| LUNCH | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|--|-------------------|------------|--------------------|---------------|----------------|
| FISH CHOWDER | 80 | 3 | 20 | 992 | 1 cup |
| BREADED LIVER | 260 | 12 | 300 | 132 | 4 oz. |
| BAKED FLOUNDER | 140 | 5 | 70 | 268 | 4 1/2 oz. |
| FRYED CHICKEN | 160 | 5 | 60 | 69 | 1/4 chicken |
| MASHED POTATOES | 129 | 5 | -- | 485 | 2/3 cup |
| MACARONI & CHEESE | 430 | 22 | -- | 179 | 1 cup |
| BROCCOLI POLONAISE | 30 | TRACE | -- | 17 | 3 stalks |
| MIXED VEGETABLES | 57 | TRACE | -- | 45 | 4 oz. |
| BLACKYE PEAS | 110 | TRACE | -- | 6 | 4 oz. |
| MEXICAN COLE SLAW | 75 | 6 | -- | 68 | 8 oz. |
| JELLIED PINEAPPLE, PEAR & BANANA | 86 | TRACE | -- | 3 | 2 1/2 " cube |
| RELISH TRAY | 35 | 2 | -- | 382 | 3 oz. |
| TOSSED VEGETABLE SALAD | 21 | TRACE | -- | 11 | 1 cup |
| ONION ROLL | 70 | 4 | -- | 276 | 2 rolls |
| ASSORTED BREAD | 130 | 2 | -- | 158 | 2 slices |
| PEANUT BUTTER CAKE W/ PEANUT BUTTER | 315 | 12 | -- | 242 | 3 x 3 x 1 1/2" |
| ICING | 150 | 3 | -- | 25 | 2 oz. |
| BLACKBERRY COBBLER | 325 | 15 | -- | 163 | |
| TAPIOCA PUDDING W/ WHIP CREAM | 110 | 4 | -- | 445 | 1/2 cup |
| W/ COCONUT COOKIES | 180 | 9 | -- | 15 | 1 tbsp. |
| | | | | 14 | 2 cookies |
| MILK | | | | | |
| WHITE | 150 | 8 | 25 | 122 | 8 oz. |
| CHOCOLATE | 210 | 8 | 25 | 149 | 8 oz. |
| SKIM | 100 | TRACE | TRACE | | 8 oz. |
| SODA | 145 | -- | -- | 20 | 8 oz.* |
| TEA | -- | -- | -- | 1 | 5 oz.* |
| COFFEE | -- | -- | -- | 2 | 5 oz. |
| SALAD DRESSING | | | | | |
| REGULAR | 150 | 16 | -- | 300 | 1 oz. |
| LOW KILOCALORIES | 40 | 4 | -- | 300 | 1 oz. |

*without cream or sugar

Day 2

| DINNER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|---------------------------------|-------------------|------------|--------------------|---------------|----------------------|
| TOMATO BOUILLON SOUP | 65 | 1 | -- | 943 | 1 cup |
| STUFFED PORK CHOP W/ APPLESAUCE | 403 58 | 27 TRACE | 70 -- | 79 2 | 1 chop 2 oz. |
| BEEF STROGANOFF | 353 | 23 | 91 | 195 | |
| SHRIMP CHOP SUEY W/ RICE | 127 116 | 2 TRACE | 125 -- | 778 2 | 1 cup 5 oz. |
| BAKED POTATO | 145 | TRACE | -- | 5 | 1 potato |
| STEAMED RICE | 93 | TRACE | -- | 2 | 4 oz. |
| CAULIFLOWER AU GRATIN | 155 | TRACE | -- | 433 | 4 oz. |
| GREEN BEANS | 17 | TRACE | -- | 4 | 1/2 oz. cheese 4 oz. |
| CARROTS | 25 | TRACE | -- | 43 | 4 oz. |
| TOSSSED VEGETABLE SALAD | 21 | TRACE | -- | 11 | 1 cup |
| COTTAGE CHEESE W/ PEAR | 55 50 | 2 TRACE | 15 -- | 228 4 | 2 oz. 1/2 pear |
| MIXED FRUIT | 100 | TRACE | -- | 3 | 1/3 cup |
| GERMAN STYLE TOMATO SALAD | 90 | 6 | -- | 92 | 1/3 cup |
| BISCUIT | 210 | 10 | -- | 350 | 2 biscuits |
| ASSORTED BREAD | 130 | 2 | -- | 158 | 2 slices |
| MAPLE CAKE W/ MAPLE ICING | 364 150 | 16 3 | -- | 242 25 | 3 x 3 x 1 1/2" 1 oz. |
| VANILLA CREAM PIE W/ WHIP CREAM | 285 10 | 14 TRACE | -- | 104 15 | 1/6 9" pie 1/2 oz. |
| APPLE CRISP | 345 | 15 | -- | 208 | 3 x 3 x 1 1/2" |
| MILK | | | | | |
| WHITE | 150 | 8 | 25 | 122 | 8 oz. |
| CHOCOLATE | 210 | 8 | 25 | 149 | 8 oz. |
| SKIM | 100 | TRACE | TRACE | | 8 oz. |
| SODA | 145 | -- | -- | 20 | 8 oz.* |
| TEA | -- | -- | -- | 1 | 5 oz.* |
| COFFEE | -- | -- | -- | 2 | 5 oz. |
| SALAD DRESSING | | | | | |
| REGULAR | 150 | 16 | -- | 300 | 1 oz. |
| LOW KILOCALORIE | 40 | 4 | -- | 300 | 1 oz. |

* without cream or sugar

Day 2

| BREAKFAST | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|-----------|-------------------|------------|--------------------|---------------|
|-----------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|----------------------------|------|-------|-----|-----|
| ORANGE JUICE | 120 | TRACE | -- | 5 |
| EGGS | 170 | 12 | 550 | 118 |
| MINCED BEEF | 140 | 5 | 40 | 55 |
| PECAN ROLLS | 562 | 32 | -- | 236 |
| MARGARINE | 70 | 8 | 24 | 95 |
| HOT CEREAL | 130 | 2 | -- | 283 |
| MILK | 150 | 8 | 25 | 122 |
| TOTAL | 1342 | 67 | 639 | 914 |
| FAT % OF TOTAL CALORIES | | 45 | | |

BEST COMBINATION

| | | | | |
|----------------------------|-----|-------|----|-----|
| HALF GRAPEFRUIT | 95 | TRACE | -- | 1 |
| PANCAKES | 110 | 4 | -- | 304 |
| BACON | 85 | 8 | 70 | 274 |
| MARGARINE | 70 | 8 | 24 | 95 |
| SYRUP | 180 | 2 | -- | 40 |
| COFFEE | -- | -- | -- | 3 |
| TOTAL | 540 | 22 | 94 | 717 |
| FAT % OF TOTAL CALORIES | | 37 | | |

Day 2

| LUNCH SHORT ORDER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|----------------------|-------------------|------------|--------------------|---------------|
|----------------------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|--------------------------------|------------|----------|-----|-----------|
| SUBMARINE SANDWICH | 998 | 61 | 113 | 1323 |
| POTATO CHIPS | 115 | 8 | -- | 200 |
| MILK (CHOC) | 210 | 8 | 25 | 149 |
| TOSS ED VEGETABLE SALAD | 21 | TRACE | -- | 11 |
| DRESSING | 150 | 16 | -- | 300 |
| PEANUT BUTTER CAKE W/ ICING | 315 | 12 | -- | 242 |
| | <u>150</u> | <u>3</u> | -- | <u>25</u> |
| TOTAL | 1959 | 108 | 138 | 2246 |

FAT % OF TOTAL
CALORIES

BEST COMBINATION

| | | | | |
|-------------------------------------|------------|-----------|----|------------|
| HAMBURGER | 355 | 19 | 70 | 461 |
| FRIED ONIONS | 70 | 7 | -- | 2 |
| MILK | 150 | 8 | 25 | 122 |
| JELLIED PINEAPPLE, PEAR & BANANA | 86 | TRACE | -- | 3 |
| BLACKBERRY COBBLER | <u>325</u> | <u>15</u> | -- | <u>163</u> |
| TOTAL | 986 | 49 | 95 | 751 |

FAT % OF TOTAL
CALORIES

Day 2

| LUNCH | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|-------|-------------------|------------|--------------------|---------------|
|-------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|--------------------------------|------------|----------|-----------|------------|
| FISH CHOWDER | 80 | 3 | 70 | 992 |
| BREADED LIVER | 260 | 12 | 300 | 132 |
| MACARONI & CHEESE | 430 | 22 | -- | 178 |
| BLACKEYE PEAS | 110 | TRACE | -- | 6 |
| TOSSED VEGETABLE SALAD | 21 | TRACE | -- | 11 |
| DRESSING | 150 | 16 | -- | 300 |
| ASSORTED BREAD | 130 | 2 | -- | 158 |
| MARGARINE | 70 | 8 | 24 | 95 |
| PEANUT BUTTER CAKE W/ ICING | 315 | 12 | -- | 242 |
| MILK (CHOC) | 150 | 3 | -- | 25 |
| | <u>210</u> | <u>8</u> | <u>25</u> | <u>149</u> |
| TOTAL | 1926 | 86 | 419 | 2288 |
| FAT % OF TOTAL CALORIES | | 40 | | |

BEST COMBINATION

| | | | | |
|-------------------------------------|------------|----------|-----------|------------|
| BAKED FLOUNDER | 140 | 5 | 70 | 268 |
| MASHED POTATOES | 129 | 5 | -- | 485 |
| BROCCOLI | 30 | TRACE | -- | 17 |
| JELLIED PINEAPPLE, PEAR & BANANA | 86 | TRACE | -- | 3 |
| ONION ROLL | 70 | 4 | -- | 276 |
| MARGARINE | 70 | 8 | 24 | 95 |
| BLACKBERRY COBBLER | 325 | 15 | -- | 163 |
| MILK | <u>150</u> | <u>8</u> | <u>25</u> | <u>122</u> |
| TOTAL | 1000 | 45 | 119 | 1429 |
| FAT % OF TOTAL CALORIES | | 41 | | |

Day 2

| DINNER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|--------|-------------------|------------|--------------------|---------------|
|--------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|---------------------------------|------------|----------|-----------|-----------|
| TOMATO BOUILLON SOUP | 65 | 1 | -- | 943 |
| STUFFED PORK CHOP W/ APPLESAUCE | 403 | 27 | 70 | 79 |
| BAKED POTATO | 58 | -- | -- | 2 |
| CARROTS | 145 | TRACE | -- | 5 |
| COTTAGE CHEESE W/ PEAR | 25 | TRACE | -- | 43 |
| MILK (CHOC) | 55 | 2 | 15 | 228 |
| MAPLE CAKE W/ ICING | 50 | TRACE | -- | 4 |
| | 210 | 8 | 25 | 149 |
| | 364 | 16 | -- | 242 |
| | <u>150</u> | <u>3</u> | <u>--</u> | <u>25</u> |
| TOTAL | 1525 | 57 | 110 | 1720 |
| FAT % OF TOTAL CALORIES | | | 33 | |

BEST COMBINATION

| | | | | |
|----------------------------|-----------|-----------|-----------|----------|
| SHRIMP CHOP SUEY W/ RICE | 127 | 2 | 125 | 778 |
| GREEN BEANS | 116 | TRACE | -- | 2 |
| MIXED FRUIT | 17 | TRACE | -- | 4 |
| ASSORTED BREAD | 100 | TRACE | -- | 3 |
| MARGARINE | 130 | 2 | -- | 158 |
| VANILLA CREAM PIE W/ CREAM | 70 | 8 | 24 | 95 |
| | 285 | 14 | -- | 104 |
| TEA | 10 | TRACE | -- | 15 |
| | <u>--</u> | <u>--</u> | <u>--</u> | <u>2</u> |
| TOTAL | 855 | 26 | 149 | 1161 |
| FAT % OF TOTAL CALORIES | | | 27 | |

Day 2

| DAILY RESULTS | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|---------------|-------------------|------------|--------------------|---------------|
|---------------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|----------------------------|-------------|-----------|------------|-------------|
| BREAKFAST | 1342 | 67 | 639 | 914 |
| LUNCH | 1959 | 108 | 138 | 2247 |
| DINNER | <u>1525</u> | <u>57</u> | <u>110</u> | <u>1720</u> |
| TOTAL | 4826 | 232 | 887 | 4881 |
| FAT % OF TOTAL CALORIES | | 43 | | |

BEST COMBINATION

| | | | | |
|----------------------------|------------|-----------|------------|-------------|
| BREAKFAST | 540 | 22 | 94 | 717 |
| LUNCH | 1000 | 45 | 119 | 1429 |
| DINNER | <u>855</u> | <u>26</u> | <u>149</u> | <u>1161</u> |
| TOTAL | 2395 | 93 | 362 | 3307 |
| FAT % OF TOTAL CALORIES | | 35 | | |

| | | | | |
|------------------------------|--------|-----|-----|------|
| RECOMMENDED DIETARY GOALS | 2700* | 30% | 300 | 2000 |
| | 2000** | | | |

* Calories for men 23 - 50 years old

** Calories for women 23 - 50 years old

National Academy of Science, "Recommended Dietary Allowances,"
(Federal printing office, ninth edition, 1980, Washington, D.C.),
p. 23.

5.2.3 Day 3, Nutritional Calculations

| BREAKFAST | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|--------------|-------------------|------------|--------------------|---------------|----------|
| ORANGE JUICE | 120 | TRACE | -- | 5 | 8 oz. * |
| COLD CEREAL | 105 | 1 | -- | 225 | 2/3 cup |
| HOT CEREAL | 130 | 2 | -- | 283 | 3/4 cup |
| PANCAKES | 110 | 4 | -- | 304 | 2 ea. |
| FRENCH TOAST | 225 | -- | -- | 217 | 2 ea. |
| WAFFLES | 205 | 8 | -- | 550 | 1 ea. |
| EGGS | 170 | 12 | 550 | 118 | 2 ea. |
| TOAST | 65 | 1 | -- | 79 | 1 ea. |
| MARGARINE | 70 | 8 | 24 | 95 | 2 pats |
| JELLY | 40 | TRACE | -- | 3 | 1 oz. |
| SYRUP | 180 | 2 | -- | 40 | 2 oz. ** |
| COFFEE | -- | -- | -- | 2 | 5 oz. ** |
| TEA | -- | -- | -- | 1 | 5 oz. |
| MILK | 150 | 8 | 25 | 122 | 8 oz. |

ADDITIONAL NONSTANDARD ITEMS

| | | | | | |
|-----------------------------|-----|-------|----|-----|----------------|
| TOMATO JUICE | 45 | TRACE | -- | 878 | 8 oz. |
| HONEYDEW MELON | 50 | TRACE | -- | 28 | 1/2 melon |
| CANADIAN BACON | 245 | 19 | 40 | 488 | 2 pieces |
| MINCED BEEF | 140 | 5 | 40 | 55 | 2 oz. |
| CHERRY QUICK COFFEE CAKE | 230 | 7 | -- | 135 | 3 x 3 x 1 1/2" |

Menu extracted from AFP 146-17, May - August 1982, Day 17

* without milk

** without cream or sugar

Day 3

| LUNCH SHORT ORDER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|-----------------------------------|-------------------|----------------|--------------------|---------------|--------------------|
| HOT DOG W/ ROLL | 290 | 15 | 40 | 728 | 2 oz./1.5 oz. |
| HAMBURGER W/ ROLL | 355 | 19 | 70 | 461 | 3.5 oz./2 oz. |
| CHEESEBURGER W/ ROLL | 460 | 28 | 94 | 709 | 3.5 oz./2 oz. |
| PEANUT BUTTER & JELLY SANDWICH | 285 | 9 | -- | 242 | 1 ea. |
| CHILE CON CARNE WITH ROLL | 460 | 18 | 70 | 1552 | 1 1/4 cup 2 oz. |
| RELISH | 20 | TRACE | -- | 124 | 1 oz. |
| FRIED ONIONS | 70 | 7 | -- | 2 | 1/4 cup |
| FRENCH FRIES | 135 | 7 | -- | 146 | 1 cup |
| POTATO CHIPS | 115 | 8 | -- | 200 | 1/2 oz. |
| SODA | 145 | 0 | -- | 20 | 8 oz. |
| MILK | | | | | |
| WHITE | 150 | 8 | 25 | 122 | 8 oz. |
| CHOCOLATE | 210 | 8 | 25 | 149 | 8 oz. |
| SKIM | 100 | TRACE | TRACE | | 8 oz. |
| BEEF TACOS | 294 | 20 | 40 | 401 | 2 ea. |
| SALAD SELECTION | | SEE LUNCH MENU | | | |
| SALAD DRESSING | | | | | |
| REGULAR | 150 | 16 | -- | 300 | 1 oz. |
| LOW KILOCALORIE | 40 | 4 | -- | 300 | 1 oz. |
| DESSERT SELECTION | | SEE LUNCH MENU | | | |

Day 3

| LUNCH | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|---------------------------------|-------------------|------------|--------------------|---------------|----------------------------------|
| FRENCH ONION SOUP | 160 | 8 | -- | 1292 | 1 cup |
| ROAST BEEF | 220 | 9 | 70 | 73 | 4 oz. |
| W/ GRAVY | 205 | 12 | -- | 171 | 1 oz. |
| BBQ SPARERIBS | 361 | 29 | 70 | 579 | 8 oz. |
| TURKEY NUGGETS | 340 | 19 | -- | 190 | 3 oz. |
| MASHED POTATOES | 195 | 7 | -- | 485 | 2/3 cup |
| FRENCH FRIES | 135 | 7 | -- | 270 | 8 oz. |
| ASPARAGUS | 170 | 9 | -- | 532 | 4 oz. |
| AU GRATIN | | | | | 1/2 oz. cheese |
| LIMA BEANS | 210 | TRACE | -- | 128 | 4 oz. |
| CABBAGE W/ BACON | 36 | 2 | -- | 86 | 4 oz. |
| LETTUCE, TOMATO AND CUCUMBER | 16 | TRACE | -- | 9 | 4 oz. |
| COTTAGE CHEESE | 55 | 2 | 15 | 228 | 2 oz. |
| W/ PEAR | 50 | TRACE | -- | 4 | 1/2 pear |
| FRUIT SALAD | 97 | TRACE | -- | 7 | 1/3 cup |
| HARD ROLLS | 155 | 2 | -- | 232 | 2 rolls |
| ASSORTED BREAD | 130 | 2 | -- | 158 | 2 slices |
| ANGEL FOOD CAKE | 135 | TRACE | -- | 134 | 4 1/2" sq. x 1 1/2", no icing |
| BLACKBERRY PIE | 325 | 15 | -- | 163 | 1/6 9" pie |
| COCONUT PUDDING | 110 | 4 | -- | 65 | 1/2 cup |
| W/ WHIP CREAM | 10 | TRACE | -- | 4 | 1/2 oz. |
| W/ FRUIT BAR | 100 | 1 | -- | 96 | 2 bars |
| MARGARINE | 70 | 8 | 24 | 95 | 2 pats |
| MILK | | | | | |
| WHITE | 150 | 8 | 25 | 122 | 8 oz. |
| CHOCOLATE | 210 | 8 | 25 | 149 | 8 oz. |
| SKIM | 100 | TRACE | TRACE | | 8 oz. |
| SODA | 145 | -- | -- | 20 | 8 oz.* |
| TEA | -- | -- | -- | 1 | 5 oz.* |
| COFFEE | -- | -- | -- | 2 | 5 oz. |
| SALAD DRESSING | | | | | |
| REGULAR | 150 | 16 | -- | 300 | 1 oz. |
| LOW KILOCALORIE | 40 | 4 | -- | 300 | 1 oz. |

* without cream or sugar

Day 3

| DINNER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|-------------------------------------|-------------------|------------|--------------------|---------------|-------------------------|
| CHICKEN SOUP | 105 | 1 | -- | 1107 | 1 cup |
| GLAZED HAM | 195 | 15 | 70 | 1114 | 4 oz. |
| BAKED VEAL STEAK W/ TOMATO SAUCE | 185 112 | 9 8 | 90 -- | 69 186 | 3 oz. 4 oz. |
| TUNA BAKED W/ NOODLES | 131 200 | 8 2 | 70 -- | 184 1 | 3 oz. 1 cup |
| WALDORF POTATOES | 177 | 9 | -- | 632 | 3/4 cup |
| PAPRIKA POTATOES | 90 | -- | -- | 5 | 1 potato |
| BROCCOLI | 25 | TRACE | -- | 17 | 4 oz. |
| O'BRIEN CORN | 65 | TRACE | -- | 3 | 4 oz. |
| PEAS | 50 | -- | -- | 80 | 4 oz. |
| PINEAPPLE, PEAR & BANANA SALAD | 122 | TRACE | -- | 7 | 6 oz. |
| TOMATO SALAD | 77 | 6 | -- | 130 | 1/3 cup |
| COTTAGE CHEESE W/ PEAR | 55 50 | 2 TRACE | 15 -- | 228 4 | 2 oz. 1/2 pear |
| BISCUITS | 90 | 3 | -- | 272 | 2 ea. |
| ASSORTED BREAD | 130 | 2 | -- | 158 | 2 slices |
| BANANA CAKE W/ ICING | 315 300 | 12 7 | -- -- | 242 50 | 3 x 3 x 1 1/2" 2 oz. |
| RAINBOW PIE | 305 | 12 | -- | 92 | 1/6 9" pie |
| APPLESAUCE CRISP | 345 | 15 | -- | 208 | 3 x 3 x 1 1/2" |
| MARGARINE | 70 | 8 | 24 | 95 | 2 pats |
| MILK | | | | | |
| WHITE | 150 | 8 | 25 | 122 | 8 oz. |
| CHOCOLATE | 210 | 8 | 25 | 149 | 8 oz. |
| SKIM | 100 | TRACE | TRACE | | 8 oz. |
| SODA | 145 | -- | -- | 20 | 8 oz.* |
| TEA | -- | -- | -- | 1 | 5 oz.* |
| COFFEE | -- | -- | -- | 2 | 5 oz. |
| SALAD DRESSING | | | | | |
| REGULAR | 150 | 16 | -- | 300 | 1 oz. |
| LOW KILOCALORIE | 40 | 4 | -- | 300 | 1 oz. |

* without cream or sugar

Day 3

| BREAKFAST | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|-----------|-------------------|------------|--------------------|---------------|
|-----------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|-----------------------------|------------|----------|-----------|------------|
| ORANGE JUICE | 120 | TRACE | -- | 5 |
| HOT CEREAL | 130 | 2 | -- | 283 |
| WAFFLES | 205 | 8 | -- | 550 |
| CANADIAN BACON | 245 | 19 | 40 | 488 |
| CHERRY QUICK COFFEE CAKE | 230 | 7 | -- | 135 |
| MARGARINE | 70 | 8 | 24 | 95 |
| SYRUP | 180 | 2 | -- | 40 |
| MILK | <u>150</u> | <u>8</u> | <u>25</u> | <u>122</u> |
| TOTAL | 1330 | 54 | 89 | 1626 |
| FAT % OF TOTAL CALORIES | | 36.5 | | |

BEST COMBINATION

| | | | | |
|----------------------------|-----|-------|----|----------|
| TOMATO JUICE | 45 | TRACE | -- | 878 |
| PANCAKES | 110 | 4 | -- | 304 |
| MARGARINE | 70 | 8 | 24 | 95 |
| JELLY | 40 | TRACE | -- | 3 |
| MINCED BEEF | 140 | 5 | 40 | 55 |
| COFFEE | -- | -- | -- | <u>2</u> |
| TOTAL | 405 | 17 | 64 | 1337 |
| FAT % OF TOTAL CALORIES | | 37 | | |

Day 3

| LUNCH SHORT ORDER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|----------------------|-------------------|------------|--------------------|---------------|
|----------------------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|-------------------------------------|------------|-----------|----|------------|
| CHILE CON CARNE | 460 | 18 | 70 | 1552 |
| FRENCH FRIES | 135 | 7 | -- | 146 |
| MILK (CHOC) | 210 | 8 | 25 | 149 |
| LETTUCE, TOMATO & CUCUMBER SALAD | 16 | TRACE | -- | 9 |
| DRESSING | 150 | 16 | -- | 300 |
| BLACKBERRY PIE | <u>325</u> | <u>15</u> | -- | <u>163</u> |
| TOTAL | 1296 | 64 | 95 | 2319 |
| FAT % OF TOTAL CALORIES | | 44 | | |

BEST COMBINATION

| | | | | |
|-----------------------------------|------------|----------|-----------|------------|
| PEANUT BUTTER & JELLY SANDWICH | 285 | 9 | -- | 242 |
| FRIED ONIONS | 70 | 7 | -- | 2 |
| FRUIT SALAD | 97 | TRACE | -- | 7 |
| ANGEL FOOD CAKE | 135 | TRACE | -- | 134 |
| MILK | <u>150</u> | <u>8</u> | <u>25</u> | <u>122</u> |
| TOTAL | 737 | 24 | 25 | 507 |
| FAT % OF TOTAL CALORIES | | 29 | | |

Day 3

| LUNCH | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|-------|-------------------|------------|--------------------|---------------|
|-------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|-------------------------------------|-----|-------|-----|------|
| FRENCH ONION SOUP | 160 | 8 | -- | 1292 |
| BBQ RIBS | 361 | 29 | 70 | 579 |
| MASHED POTATOES | 195 | 7 | -- | 485 |
| LIMA BEANS | 210 | TRACE | -- | 128 |
| LETTUCE, TOMATO & CUCUMBER SALAD | 16 | TRACE | -- | 9 |
| DRESSING (REG.) | 150 | 16 | -- | 300 |
| HARD ROLLS | 155 | 2 | -- | 232 |
| MARGARINE | 70 | 8 | 24 | 95 |
| MILK (CHOC) | 210 | 8 | 25 | 149 |
| BLACKBERRY PIE | 325 | 15 | -- | 163 |
| TOTAL | 852 | 93 | 119 | 3432 |
| FAT % OF TOTAL CALORIES | | 45 | | |

BEST COMBINATIONS

| | | | | |
|-------------------------------------|-----|-------|----|------|
| ROAST BEEF (NO GRAVY) | 220 | 9 | 70 | 73 |
| FRENCH FRIES | 135 | 7 | -- | 270 |
| CABBAGE W/ BACON | 36 | 2 | -- | 86 |
| LETTUCE, TOMATO & CUCUMBER SALAD | 16 | TRACE | -- | 9 |
| DRESSING (LO CAL.) | 40 | 4 | -- | 300 |
| ASSORTED BREAD | 130 | 2 | -- | 158 |
| MARGARINE | 70 | 8 | 24 | 95 |
| ANGEL FOOD CAKE | 135 | TRACE | -- | 134 |
| TEA | -- | -- | -- | 1 |
| TOTAL | 782 | 32 | 94 | 1126 |
| FAT % OF TOTAL CALORIES | | 37 | | |

Day 3

| DINNER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|--------|-------------------|------------|--------------------|---------------|
|--------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|------------------|------------|-----------|-----|------------|
| CHICKEN SOUP | 105 | 3 | -- | 1107 |
| VEAL STEAK | 185 | 9 | 90 | 69 |
| W/ TOMATO SAUCE | 112 | 8 | -- | 186 |
| WALDORF POTATOES | 177 | 9 | -- | 632 |
| O'BRIEN CORN | 65 | TRACE | -- | 3 |
| COTTAGE CHEESE | 55 | 2 | 15 | 228 |
| W/ PEAR | 50 | TRACE | -- | 4 |
| ASSORTED BREAD | 130 | 2 | -- | 158 |
| MARGARINE | 70 | 8 | 24 | 95 |
| MILK (CHOC) | 210 | 8 | 25 | 149 |
| APPLESAUCE CRISP | <u>345</u> | <u>15</u> | -- | <u>208</u> |
| TOTAL | 1504 | 62 | 154 | 2839 |

FAT % OF TOTAL
CALORIES

BEST COMBINATION

| | | | | |
|--------------|------------|-----------|----|-----------|
| TUNA BAKE | 331 | 10 | 70 | 185 |
| BROCCOLI | 25 | TRACE | -- | 17 |
| TOMATO SALAD | 77 | 6 | -- | 130 |
| BISCUIT | 90 | 3 | -- | 228 |
| MARGARINE | 70 | 8 | 24 | 95 |
| TEA | -- | -- | -- | 2 |
| RAINBOW PIE | <u>305</u> | <u>12</u> | -- | <u>92</u> |
| TOTAL | 898 | 39 | 94 | 749 |

FAT % OF TOTAL
CALORIES

Day 3

| DAILY RESULTS | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|---------------|-------------------|------------|--------------------|---------------|
|---------------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|----------------------------|-------------|-----------|------------|-------------|
| BREAKFAST | 1330 | 54 | 89 | 1626 |
| LUNCH | 1852 | 93 | 119 | 3432 |
| DINNER | <u>1504</u> | <u>63</u> | <u>154</u> | <u>2839</u> |
| TOTAL | 4686 | 210 | 362 | 7897 |
| FAT % OF TOTAL CALORIES | | 40 | | |

BEST COMBINATION

| | | | | |
|----------------------------|------------|-----------|-----------|------------|
| BREAKFAST | 410 | 17 | 64 | 485 |
| LUNCH | 737 | 24 | 25 | 507 |
| DINNER | <u>898</u> | <u>39</u> | <u>94</u> | <u>749</u> |
| TOTAL | 2035 | 80 | 183 | 1741 |
| FAT % OF TOTAL CALORIES | | 35 | | |

| | | | | |
|------------------------------|--------|-----|-----|------|
| RECOMMENDED DIETARY GOALS | 2700* | 30% | 300 | 2000 |
| | 2000** | | | |

* Calories for men 23 - 50 years old

** Calories for women 23 - 50 years old

National Academy of Science, "Recommended Dietary Allowances,"
(Federal printing office, ninth edition, 1980, Washington, D.C.),
p. 23.

5.2.4 Day 4, Nutritional Calculations

| BREAKFAST | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|--------------|-------------------|------------|--------------------|---------------|----------|
| ORANGE JUICE | 120 | TRACE | -- | 5 | 8 oz. * |
| COLD CEREAL | 105 | 1 | -- | 225 | 2/3 cup |
| HOT CEREAL | 130 | 2 | -- | 283 | 3/4 cup |
| PANCAKES | 110 | 4 | -- | 304 | 2 ea. |
| FRENCH TOAST | 225 | -- | -- | 217 | 2 ea. |
| WAFFLES | 205 | 8 | -- | 550 | 1 ea. |
| EGGS | 170 | 12 | 550 | 118 | 2 ea. |
| TOAST | 65 | 1 | -- | 79 | 1 ea. |
| MARGARINE | 70 | 8 | 24 | 95 | 2 pats |
| JELLY | 40 | TRACE | -- | 3 | 1 oz. |
| SYRUP | 180 | 2 | -- | 40 | 2 oz. ** |
| COFFEE | -- | -- | -- | 2 | 5 oz. ** |
| TEA | -- | -- | -- | 1 | 5 oz. |
| MILK | 150 | 8 | 25 | 122 | 8 oz. |

ADDITIONAL NONSTANDARD ITEMS

| | | | | | |
|--------------------------|-----|-------|----|-----|----------|
| VEGETABLE JUICE | 45 | TRACE | -- | 887 | 8 oz. |
| FRESH PEACHES | 40 | TRACE | -- | 1 | 1 peach |
| BACON | 85 | 8 | 70 | 274 | 2 slices |
| SAUSAGE | 60 | 6 | 70 | 336 | 2 links |
| HASHED BROWN POTATOES | 228 | 12 | -- | 15 | 2/3 cup |
| HOT CROSS BUNS | 275 | 15 | -- | 110 | 1 roll |

Menu extracted from AFP 146-17, May - August 1982, Day 26

* without milk

** without cream or sugar

Day 4

| LUNCH SHORT ORDER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|-----------------------------------|-------------------|------------|--------------------|---------------|--------------------|
| HOT DOG W/ ROLL | 290 | 15 | 40 | 728 | 2 oz./1.5 oz. |
| HAMBURGER W/ ROLL | 355 | 19 | 70 | 461 | 3.5 oz./2 oz. |
| CHEESEBURGER W/ ROLL | 460 | 28 | 94 | 709 | 3.5 oz./2 oz. |
| PEANUT BUTTER & JELLY SANDWICH | 285 | 9 | -- | 242 | 1 ea. |
| CHILE CON CARNE WITH ROLL | 460 | 18 | 70 | 1552 | 1 1/4 cup 2 oz. |
| RELISH | 20 | TRACE | -- | 124 | 1 oz. |
| FRIED ONIONS | 70 | 7 | -- | 2 | 1/4 cup |
| FRENCH FRIES | 135 | 7 | -- | 146 | 1 cup |
| POTATO CHIPS | 115 | 8 | -- | 200 | 1/2 oz. |
| SODA | 145 | 0 | -- | 20 | 8 oz. |
| MILK | | | | | |
| WHITE | 150 | 8 | 25 | 122 | 8 oz. |
| CHOCOLATE | 210 | 8 | 25 | 149 | 8 oz. |
| SKIM | 100 | TRACE | TRACE | | 8 oz. |
| GRILLED HAM AND CHEESE | 465 | 30 | 35 | 822 | 1 sandwich |
| SALAD SELECTION | | | SEE LUNCH MENU | | |
| SALAD DRESSING | | | | | |
| REGULAR | 150 | 16 | -- | 300 | 1 oz. |
| LOW KILOCALORIE | 40 | 4 | -- | 300 | 1 oz. |
| DESSERT SELECTION | | | SEE LUNCH MENU | | |

Day 4

| LUNCH | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|-------------------------------------|-------------------|------------|--------------------|---------------|----------------|
| BEAN SOUP | 170 | 6 | -- | 823 | 1 cup |
| PORK CHOPS | 305 | 25 | 70 | 79 | 1 ea. |
| W/ APPLE RINGS | 25 | TRACE | -- | 1 | 1 ea. |
| BRAISED BEEF CUBES | 245 | 16 | 70 | 55 | 3.5 oz. |
| SEAFOOD NEWBURG | 347 | 35 | 97 | 398 | 2/3 cup |
| PARSLEY POTATO | 140 | 6 | -- | 65 | 1 potato |
| BAKED POTATO | 145 | TRACE | -- | 5 | 1 potato |
| BUTTERED ASPARAGUS | 70 | 6 | -- | 64 | 4 oz. |
| BUTTERED GREENS | 85 | 6 | -- | 64 | 4 oz. |
| O'BRIEN CORN | 65 | TRACE | -- | 3 | 4 oz. |
| LETTUCE, TOMATO & CUCUMBER SALAD | 16 | TRACE | -- | 9 | 1 cup |
| JELLIED FRUIT COCKTAIL | 56 | TRACE | -- | 8 | 4 oz. |
| KIDNEY BEAN SALAD | 125 | TRACE | -- | 80 | 1/2 cup |
| HARD ROLLS | 155 | 2 | -- | 232 | 2 ea. |
| ASSORTED BREAD | 130 | 2 | -- | 158 | 2 slices |
| MAPLE NUT CAKE | 364 | 16 | -- | 242 | 3 x 3 x 1 1/2" |
| W/ MAPLE ICING | 150 | 3 | -- | 25 | 1 oz. |
| APRICOT PIE | 345 | 14 | -- | 169 | 1/6 9" pie |
| BUTTERSCOTCH PUDDING | 163 | 4 | -- | 445 | 1/2 cup |
| W/ WHIP CREAM | 10 | TRACE | -- | 12 | 1 tbsp. |
| W/ SUGAR COOKIES | 60 | 3 | -- | 108 | 1 ea. |
| MILK | | | | | |
| WHITE | 150 | 8 | 25 | 122 | 8 oz. |
| CHOCOLATE | 210 | 8 | 25 | 149 | 8 oz. |
| SKIM | 100 | TRACE | TRACE | | 8 oz. |
| SODA | 145 | -- | -- | 20 | 8 oz.* |
| TEA | -- | -- | -- | 1 | 5 oz.* |
| COFFEE | -- | -- | -- | 2 | 5 oz. |
| SALAD DRESSING | | | | | |
| REGULAR | 150 | 16 | -- | 300 | 1 oz. |
| LOW KILOCALORIE | 40 | 4 | -- | 300 | 1 oz. |

*without cream or sugar

Day 4

| DINNER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|---|-------------------|------------|--------------------|---------------|-------------------------|
| CREAMED MUSHROOM SOUP | 215 | 14 | -- | 1076 | 1 cup |
| BREADED VEAL STEAK | 230 | 14 | 90 | 92 | 4 oz. |
| BEEF BALL STROGANOFF | 459 | 33 | 91 | 195 | 4 oz. |
| CHICKEN CHOW MEIN W/ CHOW MEIN NOODLES | 225 73 | 10 1 | 60 -- | 718 -- | 1 cup 1/3 cup |
| RICE | 120 | 1 | -- | 2 | 4 oz. |
| MASHED POTATOES | 195 | 7 | -- | 485 | 5 oz. |
| FRIED CAULIFLOWER | 34 | 1 | -- | 6 | 4 oz. |
| CARROTS | 25 | TRACE | -- | 43 | 4 oz. |
| BUTTERED LIMA BEANS | 135 | 6 | -- | 124 | 4 oz. |
| COTTAGE CHEESE W/ PINEAPPLE | 55 80 | 2 TRACE | 15 -- | 228 2 | 2 oz. 1 slice |
| GERMAN COLE SLAW | 70 | 7 | -- | 68 | 4 oz. |
| MIXED FRUIT | 110 | TRACE | -- | 15 | 4 oz. |
| RELISH TRAY | 35 | 2 | -- | 382 | 3 oz. |
| CORN BREAD | 180 | 10 | -- | 352 | 3 x 3 1 1/2" |
| ASSORTED BREAD | 130 | 2 | -- | 158 | 2 slices |
| MARBLE CAKE W/ MOCHA ICING | 175 150 | 4 3 | -- | 242 25 | 3 x 3 x 1 1/2" 1 oz. |
| LEMON MERINGUE PIE | 305 | 12 | -- | 194 | 1/6 9" pie |
| CHERRY CRUNCH | 350 | 15 | -- | 169 | 3 x 3 x 1 1/2" |
| MILK | | | | | |
| WHITE | 150 | 8 | 25 | 122 | 8 oz. |
| CHOCOLATE | 210 | 8 | 25 | 149 | 3 oz. |
| SKIM | 100 | TRACE | TRACE | | 8 oz. |
| SODA | 145 | -- | -- | 20 | 8 oz.* |
| TEA | -- | -- | -- | 1 | 5 oz.* |
| COFFEE | -- | -- | -- | 2 | 5 oz. |
| SALAD DRESSING | | | | | |
| REGULAR | 150 | 16 | -- | 300 | 1 oz. |
| LOW KILOCALORIE | 40 | 4 | -- | 300 | 1 oz. |

*without cream or sugar

Day 4

| BREAKFAST | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|-----------|-------------------|------------|--------------------|---------------|
|-----------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|--------------------------|------------|----------|-----------|------------|
| ORANGE JUICE | 120 | TRACE | -- | 5 |
| HOT CEREAL | 130 | 2 | -- | 283 |
| EGGS | 170 | 12 | 550 | 118 |
| BACON | 85 | 8 | 70 | 274 |
| HASHED BROWN POTATOES | 228 | 12 | -- | 15 |
| HOT CROSS BUNS | 275 | 15 | -- | 110 |
| MARGARINE | 70 | 8 | 24 | 95 |
| MILK | <u>150</u> | <u>8</u> | <u>25</u> | <u>122</u> |
| TOTAL | 1228 | 65 | 669 | 1022 |

FAT % OF TOTAL
CALORIES

BEST COMBINATION

| | | | | |
|-------------|------------|----------|-----------|------------|
| FRESH PEACH | 40 | TRACE | -- | 1 |
| PANCAKES | 110 | 4 | -- | 304 |
| SAUSAGE | 60 | 6 | 70 | 336 |
| SYRUP | 180 | 2 | -- | 40 |
| MILK | <u>150</u> | <u>8</u> | <u>25</u> | <u>122</u> |
| TOTAL | 540 | 20 | 95 | 803 |

FAT % OF TOTAL
CALORIES

Day 4

| LUNCH SHORT ORDER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|----------------------|-------------------|------------|--------------------|---------------|
|----------------------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|-------------------------------------|------------|----------|----|-----------|
| GRILLED HAM AND CHEESE | 465 | 30 | 35 | 822 |
| FRENCH FRIES | 135 | 7 | -- | 146 |
| MILK (CHOC) | 210 | 8 | 25 | 149 |
| LETTUCE, TOMATO & CUCUMBER SALAD | 16 | TRACE | -- | 9 |
| DRESSING (REG.) | 150 | 16 | -- | 300 |
| MAPLE NUT CAKE W/ MAPLE ICING | 364 | 16 | -- | 242 |
| | <u>150</u> | <u>3</u> | -- | <u>25</u> |
| TOTAL | 1490 | 80 | 60 | 1668 |
| FAT % OF TOTAL CALORIES | | 48 | | |

BEST COMBINATION

| | | | | |
|-----------------------------------|-----------|----------|----|------------|
| PEANUT BUTTER & JELLY SANDWICH | 285 | 9 | -- | 242 |
| FRIED ONIONS | 70 | 7 | -- | 2 |
| MILK | 150 | 8 | 25 | 122 |
| JELLIED FRUIT COCKTAIL | 56 | TRACE | -- | 8 |
| BUTTERSCOTCH PUDDING | 163 | 4 | -- | 445 |
| W/ WHIP CREAM | 10 | TRACE | -- | 12 |
| W/ SUGAR COOKIE | <u>60</u> | <u>3</u> | -- | <u>108</u> |
| TOTAL | 794 | 31 | 25 | 939 |
| FAT % OF TOTAL CALORIES | | 35 | | |

Day 4

| LUNCH | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|-------|-------------------|------------|--------------------|---------------|
|-------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|-------------------------------------|------|----------|-----------|------------|
| BEAN SOUP | 170 | 6 | -- | 823 |
| SEAFOOD NEWBURG | 347 | 35 | 97 | 398 |
| PARSLEY POTATO | 140 | 6 | -- | 65 |
| BUTTERED GREENS | 85 | 6 | -- | 64 |
| LETTUCE, TOMATO & CUCUMBER SALAD | 16 | TRACE | -- | 9 |
| DRESSING (REG.) | 150 | 16 | -- | 300 |
| HARD ROLLS | 155 | 2 | -- | 232 |
| MARGARINE | 70 | 8 | 24 | 95 |
| MAPLE NUT CAKE | 364 | 16 | -- | 242 |
| W/ MAPLE ICING | 150 | 3 | -- | 25 |
| MILK (CHOC) | 210 | <u>8</u> | <u>25</u> | <u>149</u> |
| TOTAL | 1857 | 106 | 146 | 2402 |

FAT % OF TOTAL
CALORIES

BEST COMBINATION

| | | | | |
|---------------------------|------------|----------|-----------|------------|
| BRAISED BEEF CUBES | 245 | 16 | 70 | 55 |
| BAKED POTATO | 145 | TRACE | -- | 5 |
| O'BRIEN CORN | 65 | TRACE | -- | 3 |
| JELLIED FRUIT COCKTAIL | 56 | TRACE | -- | 8 |
| ASSORTED BREAD | 130 | 2 | -- | 158 |
| BUTTERSCOTCH PUDDING | 163 | 4 | -- | 145 |
| W/ WHIP CREAM | 10 | TRACE | -- | 12 |
| W/ SUGAR COOKIES | 60 | 3 | -- | 108 |
| MILK | <u>150</u> | <u>8</u> | <u>25</u> | <u>122</u> |
| TOTAL | 1024 | 33 | 95 | 616 |

FAT % OF TOTAL
CALORIES

Day 4

| DINNER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|--------|-------------------|------------|--------------------|---------------|
|--------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|--------------------------------|----------|------------|----------|----------|
| CREAMED MUSHROOM SOUP | 215 | 14 | -- | 1076 |
| BEEF BALL STROGANOFF | 459 | 33 | 91 | 195 |
| MASHED POTATOES | 195 | 7 | -- | 485 |
| BUTTERED LIMA BEANS | 135 | 6 | -- | 124 |
| COTTAGE CHEESE W/ PINEAPPLE | 55 80 | 2 TRACE | 15 -- | 228 2 |
| CORN BREAD | 180 | 10 | -- | 352 |
| CHERRY CRUNCH | 350 | 15 | -- | 169 |
| MARGARINE | 70 | 8 | 24 | 95 |
| MILK (CHOC) | 210 | 8 | 25 | 149 |
| TOTAL | 1949 | 103 | 155 | 2875 |

FAT % OF TOTAL
CALORIES

BEST COMBINATION

| | | | | |
|--------------------|------|-------|-----|-----|
| BREADED VEAL STEAK | 230 | 14 | 90 | 92 |
| RICE | 120 | 1 | -- | 2 |
| CARROTS | 25 | TRACE | -- | 43 |
| GERMAN COLE SLAW | 70 | 7 | -- | 68 |
| ASSORTED BREAD | 130 | 2 | -- | 158 |
| LEMON MERINGUE PIE | 305 | 12 | -- | 194 |
| MARGARINE | 70 | 8 | 24 | 95 |
| MILK | 150 | 8 | 25 | 122 |
| TOTAL | 1100 | 52 | 139 | 774 |

FAT % OF TOTAL
CALORIES

Day 4

| DAILY RESULTS | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|---------------|-------------------|------------|--------------------|---------------|
|---------------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|----------------------------|-------------|------------|------------|-------------|
| BREAKFAST | 1228 | 65 | 669 | 1022 |
| LUNCH | 1857 | 106 | 146 | 2402 |
| DINNER | <u>1949</u> | <u>103</u> | <u>155</u> | <u>2875</u> |
| TOTAL | 5034 | 274 | 970 | 6299 |
| FAT % OF TOTAL CALORIES | | 49 | | |

BEST COMBINATION

| | | | | |
|----------------------------|-------------|-----------|------------|------------|
| BREAKFAST | 540 | 20 | 95 | 803 |
| LUNCH | 794 | 31 | 25 | 939 |
| DINNER | <u>1100</u> | <u>52</u> | <u>139</u> | <u>774</u> |
| TOTAL | 2434 | 103 | 259 | 2516 |
| FAT % OF TOTAL CALORIES | | 38 | | |

| | | | | |
|------------------------------|--------|-----|-----|------|
| RECOMMENDED DIETARY GOALS | 2700* | 30% | 300 | 2000 |
| | 2000** | | | |

* Calories for men 23 - 50 years old

** Calories for women 23 - 50 years old

National Academy of Science, "Recommended Dietary Allowances,"
(Federal printing office, ninth edition, 1980, Washington, D.C.),
p. 23.

5.2.5 Day 5, Nutritional Calculations

| BREAKFAST | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|--------------|-------------------|------------|--------------------|---------------|----------|
| ORANGE JUICE | 120 | TRACE | -- | 5 | 8 oz. * |
| COLD CEREAL | 105 | 1 | -- | 225 | 2/3 cup |
| HOT CEREAL | 130 | 2 | -- | 283 | 3/4 cup |
| PANCAKES | 110 | 4 | -- | 304 | 2 ea. |
| FRENCH TOAST | 225 | -- | -- | 217 | 2 ea. |
| WAFFLES | 205 | 8 | -- | 550 | 1 ea. |
| EGGS | 170 | 12 | 550 | 118 | 2 ea. |
| TOAST | 65 | 1 | -- | 79 | 1 ea. |
| MARGARINE | 70 | 8 | 24 | 95 | 2 pats |
| JELLY | 40 | TRACE | -- | 3 | 1 oz. |
| SYRUP | 180 | 2 | -- | 40 | 2 oz. ** |
| COFFEE | -- | -- | -- | 2 | 5 oz. ** |
| TEA | -- | -- | -- | 1 | 5 oz. |
| MILK | 150 | 8 | 25 | 122 | 8 oz. |

ADDITIONAL NONSTANDARD ITEMS

| | | | | | |
|-----------------|-----|-------|----|-----|----------|
| GRAPE JUICE | 135 | TRACE | -- | 8 | 8 oz. |
| HALF GRAPEFRUIT | 95 | TRACE | -- | 1 | 1/2 |
| BACON | 85 | 8 | 70 | 274 | 2 slices |
| SAUSAGE | 120 | 12 | 70 | 336 | 2 links |
| BUTTERSCOTCH | 370 | 12 | -- | 350 | 2 ea. |
| PINWHEELS | | | | | |

Menu extracted from AFP 146-17, May - August 1982, Day 36

* without milk

** without cream or sugar

Day 5

| LUNCH SHORT ORDER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|-----------------------------------|-------------------|----------------|--------------------|---------------|--------------------|
| HOT DOG W/ ROLL | 290 | 15 | 40 | 728 | 2 oz./1.5 oz. |
| HAMBURGER W/ ROLL | 355 | 19 | 70 | 461 | 3.5 oz./2 oz. |
| CHEESEBURGER W/ ROLL | 460 | 28 | 94 | 709 | 3.5 oz./2 oz. |
| PEANUT BUTTER & JELLY SANDWICH | 285 | 9 | -- | 242 | 1 ea. |
| CHILE CON CARNE WITH ROLL | 460 | 18 | 70 | 1552 | 1 1/4 cup 2 oz. |
| RELISH | 20 | TRACE | -- | 124 | 1 oz. |
| FRIED ONIONS | 70 | 7 | -- | 2 | 1/4 cup |
| FRENCH FRIES | 135 | 7 | -- | 146 | 1 cup |
| POTATO CHIPS | 115 | 8 | -- | 200 | 1/2 oz. |
| SODA | 145 | 0 | -- | 20 | 8 oz. |
| MILK | | | | | |
| WHITE | 150 | 8 | 25 | 122 | 8 oz. |
| CHOCOLATE | 210 | 8 | 25 | 149 | 8 oz. |
| SKIM | 100 | TRACE | TRACE | | 8 oz. |
| FISHWICH | 150 | 9 | 70 | 882 | 1 portion |
| W/ TARTAR SAUCE | 75 | 8 | -- | -- | 1 tbsp. |
| W/ ROLL | 140 | 2 | -- | 158 | 1 ea. |
| SALAD SELECTION | | SEE LUNCH MENU | | | |
| SALAD DRESSING | | | | | |
| REGULAR | 150 | 16 | -- | 300 | 1 oz. |
| LOW KILOCALORIE | 40 | 4 | -- | 300 | 1 oz. |
| DESSERT SELECTION | | SEE LUNCH MENU | | | |

Day 5

| LUNCH | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|------------------------|-------------------|------------|--------------------|---------------|-------------------------|
| CHICKEN VEGETABLE SOUP | 80 | 2 | -- | 957 | 1 cup |
| FRIED HAM STEAKS | 245 | 19 | 70 | 1114 | 4 oz. |
| SPAGHETTI W/ MEAT | 330 | 12 | 70 | 985 | 1 cup/3.5 oz. |
| ROAST DUCK | 220 | 15 | 60 | 113 | 1/4 duck |
| POTATO BALLS | 98 | 4 | -- | 485 | 4 oz. |
| SPINACH | 22 | TRACE | -- | 65 | 4 oz. |
| CORN ON THE COB | 120 | 1 | -- | 1 | 1 cob |
| FRYED OKRA | 57 | 1 | -- | 2 | 4 oz. |
| TOSSSED SALAD | 21 | TRACE | -- | 11 | 1 cup |
| PINEAPPLE COLE SLAW | 98 | 6 | -- | 69 | 4 oz. |
| RELISH TRAY | 35 | 2 | -- | 382 | 3 oz. |
| MIXED FRUIT | 110 | TRACE | -- | 15 | 1/2 cup |
| GARLIC BREAD | 200 | 2 | -- | 231 | 2 slices |
| ASSORTED BREAD | 130 | 2 | -- | 158 | 2 slices |
| SPICE CAKE W/ ICING | 175 150 | 4 3 | -- | 242 25 | 3 x 3 x 1 1/2" 1 oz. |
| PINEAPPLE PIE | 345 | 15 | -- | 208 | 1/6 9" pie |
| STRAWBERRY JELLO | 70 | TRACE | -- | -- | 2/3 cup |
| MILK | | | | | |
| WHITE | 150 | 8 | 25 | 122 | 8 oz. |
| CHOCOLATE | 210 | 8 | 25 | 149 | 8 oz. |
| SKIM | 100 | TRACE | TRACE | | 8 oz. |
| SODA | 145 | -- | -- | 20 | 8 oz.* |
| TEA | -- | -- | -- | 1 | 5 oz.* |
| COFFEE | -- | -- | -- | 2 | 5 oz. |
| SALAD DRESSING | | | | | |
| REGULAR | 150 | 16 | -- | 300 | 1 oz. |
| LOW KILOCALORIE | 40 | 4 | -- | 300 | 1 oz. |

*without cream or sugar

Day 5

| DINNER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|---------------------|-------------------|------------|--------------------|---------------|----------------|
| BEEF BARLEY SOUP | 65 | 3 | -- | 952 | 1 cup |
| ROAST BEEF | 220 | 9 | 70 | 73 | 4 oz. |
| W/ NATURAL GRAVY | 25 | 1 | -- | 18 | 1 oz. |
| TURKEY NUGGETS | 340 | 19 | -- | 182 | 3 oz. |
| W/ CHICKEN GRAVY | 135 | 10 | -- | 190 | 1 oz. |
| SWEET AND SOUR PORK | 468 | 20 | 70 | 1968 | 1 cup |
| MASHED POTATOES | 195 | 7 | -- | 485 | 5 oz. |
| PARSLEY POTATOES | 140 | 6 | -- | 65 | 1 potato |
| SPICED BEETS | 77 | TRACE | -- | 165 | 4 oz. |
| BRUSSEL SPROUTS | 25 | TRACE | -- | 7 | 4 oz. |
| LIMA BEANS | 85 | TRACE | -- | 64 | 4 oz. |
| COTTAGE CHEESE | 55 | 2 | 15 | 228 | 2 oz. |
| CARDINAL SALAD | 92 | 6 | -- | 241 | 4 oz. |
| HARD ROLLS | 155 | 2 | -- | 232 | 2 ea. |
| ASSORTED BREAD | 130 | 2 | -- | 158 | 2 slices |
| YELLOW CAKE | 250 | 8 | -- | 242 | 3 x 3 x 1 1/2" |
| W/ CHOC ICING | 150 | 3 | -- | 25 | 1 oz. |
| SWEET POTATO PIE | 285 | 12 | -- | 169 | 1/6 9" pie |
| BANANA PUDDING | 160 | 4 | -- | 445 | 1/2 cup |
| W/ NUT BAR | 100 | 2 | -- | 96 | 2 bars |
| MILK | | | | | |
| WHITE | 150 | 8 | 25 | 122 | 8 oz. |
| CHOCOLATE | 210 | 8 | 25 | 149 | 8 oz. |
| SKIM | 100 | TRACE | TRACE | | 8 oz. |
| SODA | 145 | -- | -- | 20 | 8 oz.* |
| TEA | -- | -- | -- | 1 | 5 oz.* |
| COFFEE | -- | -- | -- | 2 | 5 oz. |
| SALAD DRESSING | | | | | |
| REGULAR | 150 | 16 | -- | 300 | 1 oz. |
| LOW KILOCALORIE | 40 | 4 | -- | 300 | 1 oz. |

*without cream or sugar

Day 5

| BREAKFAST | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|-----------|-------------------|------------|--------------------|---------------|
|-----------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|----------------------------|------|-------|-----|------|
| GRAPE JUICE | 135 | TRACE | -- | 8 |
| CEREAL HOT | 130 | 2 | -- | 283 |
| WAFFLES | 205 | 8 | -- | 550 |
| SAUSAGE | 120 | 12 | 70 | 336 |
| BUTTERSCOTCH PINWHEEL | 370 | 12 | -- | 350 |
| MARGARINE | 70 | 8 | 24 | 95 |
| SYRUP | 180 | 2 | -- | 40 |
| MILK | 150 | 8 | 25 | 122 |
| TOTAL | 1360 | 52 | 119 | 1784 |
| FAT % OF TOTAL CALORIES | | 34 | | |

BEST COMBINATION

| | | | | |
|----------------------------|-----|-------|----|-----|
| HALF GRAPEFRUIT | 95 | TRACE | -- | 1 |
| CEREAL COLD | 105 | 1 | -- | 225 |
| MILK | 150 | 8 | 25 | 122 |
| BUTTERSCOTCH PINWHEEL | 370 | 12 | -- | 350 |
| COFFEE | -- | -- | -- | 3 |
| TOTAL | 620 | 21 | 25 | 701 |
| FAT % OF TOTAL CALORIES | | 30 | | |

Day 5

| LUNCH SHORT ORDER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|----------------------|-------------------|------------|--------------------|---------------|
|----------------------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|------------------------------------|-------------|-----------|------------|-------------|
| CHEESEBURGER | 460 | 28 | 94 | 709 |
| FRENCH FRIES | 135 | 7 | -- | 146 |
| MILK (CHOC) | 210 | 8 | 25 | 149 |
| TOSSED SALAD | 21 | TRACE | -- | 11 |
| DRESSING (REG.) | 150 | 16 | -- | 300 |
| PINEAPPLE PIE | <u>345</u> | <u>15</u> | -- | <u>208</u> |
| TOTAL | 1321 | 74 | 119 | 1523 |
| FAT % OF TOTAL CALORIES | | 50 | | |

BEST COMBINATION

| | | | | |
|------------------------------------|------------|--------------|-----------|------------|
| PEANUT BUTTER & JELLY SANDWICH | 285 | 9 | -- | 242 |
| FRIED ONIONS | 70 | 7 | -- | 2 |
| MILK | 150 | 8 | 25 | 122 |
| MIXED FRUIT | 110 | TRACE | -- | 15 |
| STRAWBERRY JELLO | <u>70</u> | <u>TRACE</u> | -- | -- |
| TOTAL | 685 | 24 | 25 | 381 |
| FAT % OF TOTAL CALORIES | | 31.5 | | |

Day 5

| LUNCH | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|-------|-------------------|------------|--------------------|---------------|
|-------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|------------------------|-------------|-----------|------------|-------------|
| CHICKEN VEGETABLE SOUP | 80 | 2 | -- | 957 |
| FRYED HAM STEAK | 245 | 19 | 70 | 1114 |
| POTATO BALLS | 98 | 4 | -- | 485 |
| CORN ON THE COB | 120 | 1 | -- | 1 |
| TOSSED SALAD | 21 | TRACE | -- | 11 |
| DRESSING (REG) | 150 | 16 | -- | 300 |
| ASSORTED BREAD | 130 | 2 | -- | 158 |
| PINEAPPLE PIE | 345 | 15 | -- | 208 |
| MILK (CHOC) | 210 | 8 | 25 | 149 |
| MARGARINE | <u>70</u> | <u>8</u> | <u>24</u> | <u>95</u> |
| TOTAL | 1469 | 75 | 119 | 3478 |

FAT % OF TOTAL CALORIES

BEST COMBINATION

| | | | | |
|-------------------|------------|--------------|-----------|-------------|
| SPAGHETTI W/ MEAT | 330 | 12 | 70 | 985 |
| SPINACH | 22 | TRACE | -- | 65 |
| RELISH TRAY | 35 | 2 | -- | 382 |
| GARLIC BREAD | 200 | 2 | -- | 231 |
| STRAWBERRY JELLO | <u>70</u> | <u>TRACE</u> | <u>--</u> | <u>--</u> |
| TOTAL | 657 | 16 | 70 | 1671 |

FAT % OF TOTAL CALORIES

Day 5

| DINNER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|--------|-------------------|------------|--------------------|---------------|
|--------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|-------------------------------|------------|----------|-----------|------------|
| BEEF BARLEY SOUP | 65 | 3 | -- | 952 |
| SWEET AND SOUR PORK | 468 | 20 | 70 | 1968 |
| MASHED POTATOES | 195 | 7 | -- | 485 |
| SPICED BEETS | 77 | TRACE | -- | 165 |
| COTTAGE CHEESE | 55 | 2 | 15 | 228 |
| HARD ROLLS | 155 | 2 | -- | 232 |
| MARGARINE | 70 | 8 | 24 | 95 |
| BANANA PUDDING W/ NUT BARS | 160 100 | 4 2 | -- | 445 96 |
| MILK(CHOC) | <u>210</u> | <u>8</u> | <u>25</u> | <u>149</u> |
| TOTAL | 1555 | 56 | 134 | 3815 |
| FAT % OF TOTAL CALORIES | | 32 | | |

BEST COMBINATION

| | | | | |
|--------------------------------|------------|--------|----------|-----------|
| ROAST BEEF W/ NATURAL GRAVY | 220 25 | 9 1 | 70 -- | 73 18 |
| PARSLEY POTATOES | 140 | 6 | -- | 65 |
| BRUSSEL SPROUTS | 25 | TRACE | -- | 7 |
| JELLIED BANANA | 58 | -- | -- | 1 |
| ASSORTED BREAD | 130 | 2 | -- | 158 |
| YELLOW CAKE W/ CHOC ICING | 250 150 | 8 3 | -- | 242 25 |
| COFFEE | -- | -- | -- | <u>3</u> |
| TOTAL | 998 | 29 | 70 | 592 |
| FAT % OF TOTAL CALORIES | | 26 | | |

Day 5

| DAILY RESULTS | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|---------------|-------------------|------------|--------------------|---------------|
|---------------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|----------------------------|-------------|-----------|------------|-------------|
| BREAKFAST | 1360 | 52 | 119 | 1692 |
| LUNCH | 1469 | 75 | 119 | 3478 |
| DINNER | <u>1555</u> | <u>56</u> | <u>134</u> | <u>3815</u> |
| TOTAL | 4384 | 183 | 372 | 8985 |
| FAT % OF TOTAL CALORIES | | 37.6 | | |

BEST COMBINATION

| | | | | |
|----------------------------|------------|-----------|-----------|------------|
| BREAKFAST | 620 | 21 | 25 | 701 |
| LUNCH | 685 | 24 | 25 | 381 |
| DINNER | <u>998</u> | <u>29</u> | <u>70</u> | <u>592</u> |
| TOTAL | 2303 | 74 | 120 | 1674 |
| FAT % OF TOTAL CALORIES | | 30 | | |

| | | | | |
|------------------------------|--------|-----|-----|------|
| RECOMMENDED DIETARY GOALS | 2700* | 30% | 300 | 2000 |
| | 2000** | | | |

* Calories for men 23 - 50 years old

** Calories for women 23 - 50 years old

National Academy of Science, "Recommended Dietary Allowances,"
(Federal printing office, ninth edition, 1980, Washington, D.C.),
p. 23.

AD-A132 632 AN EVALUATION OF THE UNITED STATES AIR FORCE MENU
CONCERNING KILOCALORIE. (U) AIR FORCE INST OF TECH
WRIGHT-PATTERSON AFB OH D P FLACK MAY 83

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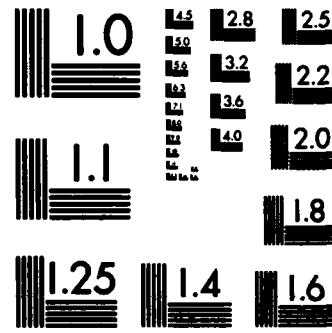
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F/G 6/8

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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

5.2.6 Day 6, Nutritional Calculations

| BREAKFAST | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|--------------|-------------------|------------|--------------------|---------------|---------|
| ORANGE JUICE | 120 | TRACE | -- | 5 | 8 oz. * |
| COLD CEREAL | 105 | 1 | -- | 225 | 2/3 cup |
| HOT CEREAL | 130 | 2 | -- | 283 | 3/4 cup |
| PANCAKES | 110 | 4 | -- | 304 | 2 ea. |
| FRENCH TOAST | 225 | -- | -- | 217 | 2 ea. |
| WAFFLES | 205 | 8 | -- | 550 | 1 ea. |
| EGGS | 170 | 12 | 550 | 118 | 2 ea. |
| TOAST | 65 | 1 | -- | 79 | 1 ea. |
| MARGARINE | 70 | 8 | 24 | 95 | 2 pats |
| JELLY | 40 | TRACE | -- | 3 | 1 oz. |
| SYRUP | 180 | 2 | -- | 40 | 2 oz.** |
| COFFEE | -- | -- | -- | 2 | 5 oz.** |
| TEA | -- | -- | -- | 1 | 5 oz. |
| MILK | 150 | 8 | 25 | 122 | 8 oz. |

ADDITIONAL NONSTANDARD ITEMS

| | | | | | |
|-----------------|-----|-------|----|-----|----------|
| GRAPE JUICE | 135 | TRACE | -- | 8 | 8 oz. |
| GRAPEFRUIT HALF | 95 | TRACE | -- | 1 | 1/2 |
| BACON | 85 | 8 | 70 | 274 | 2 slices |
| GRILLED HAM | 123 | 9 | 35 | 557 | 2 oz. |
| SNAIL ROLLS | 550 | 30 | -- | 220 | 2 ea. |

Menu extracted from AFP 146-17, May - August 1982, Day 42

* without milk

** without cream or sugar

Day 6

| LUNCH SHORT ORDER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|-------------------------------------|-------------------|------------|--------------------|---------------|--------------------|
| HOT DOG W/ ROLL | 290 | 15 | 40 | 728 | 2 oz./1.5 oz. |
| HAMBURGER W/ ROLL | 355 | 19 | 70 | 461 | 3.5 oz./2 oz. |
| CHEESEBURGER W/ ROLL | 460 | 28 | 94 | 709 | 3.5 oz./2 oz. |
| PEANUT BUTTER & JELLY SANDWICH | 285 | 9 | -- | 242 | 1 ea. |
| CHILE CON CARNE WITH ROLL | 460 | 18 | 70 | 1552 | 1 1/4 cup 2 oz. |
| RELISH | 20 | TRACE | -- | 124 | 1 oz. |
| FRIED ONIONS | 70 | 7 | -- | 2 | 1/4 cup |
| FRENCH FRIES | 135 | 7 | -- | 146 | 1 cup |
| POTATO CHIPS | 115 | 8 | -- | 200 | 1/2 oz. |
| SODA | 145 | 0 | -- | 20 | 8 oz. |
| MILK | | | | | |
| WHITE | 150 | 8 | 25 | 122 | 8 oz. |
| CHOCOLATE | 210 | 8 | 25 | 149 | 8 oz. |
| SKIM | 100 | TRACE | TRACE | | 8 oz. |
| PIMENTO LOAF AND CHEESE SANDWICH | 325 | 19 | 44 | 888 | 1 sandwich |
| SALAD SELECTION | | | SEE LUNCH MENU | | |
| SALAD DRESSING | | | | | |
| REGULAR | 150 | 16 | -- | 300 | 1 oz. |
| LOW KILOCALORIE | 40 | 4 | -- | 300 | 1 oz. |
| DESSERT SELECTION | | | SEE LUNCH MENU | | |

Day 6

| LUNCH | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|---------------------------------|-------------------|------------|--------------------|---------------|------------------|
| PEA SOUP | 145 | 3 | -- | 987 | 1 cup |
| SEAFOOD PLATTER | 327 | 19 | 161 | 544 | 4 oz. |
| GLAZED CORN BEEF | 261 | 13 | 70 | 1069 | 4 oz. |
| SPAGHETTI W/ MEAT SAUCE | 330 | 12 | 70 | 985 | 1 cup 2/3 cup |
| BAKED POTATO | 145 | TRACE | -- | 5 | 1 potato |
| MIXED VEGETABLE | 57 | TRACE | -- | 45 | 4 oz. |
| BROCCOLI AU GRATIN | 30 | TRACE | -- | 440 | 4 oz. |
| BEETS | 30 | TRACE | -- | 239 | 4 oz. |
| GARDEN VEGETABLE SALAD | 21 | TRACE | -- | 11 | 1 cup |
| COTTAGE CHEESE | 55 | 2 | 15 | 228 | 2 oz. |
| JELLIED PEACH SALAD | 59 | TRACE | -- | 1 | 3 x 2 1/2" sq. |
| RELISH TRAY | 35 | 2 | -- | 382 | 3 oz. |
| FRENCH BREAD | 200 | 2 | -- | 232 | 2 slices |
| ASSORTED BREAD | 130 | 2 | -- | 158 | 2 slices |
| POUND CAKE W/ CHOC ICING | 160 | 10 | -- | 171 | 3/4 x 4 1/2" sq |
| PINEAPPLE CHIFFON PIE | 305 | 12 | -- | 92 | 1/6 9" pie |
| ORANGE PUDDING W/ WHIP CREAM | 160 | 4 | -- | 445 | 1/2 cup |
| W/ NUT BAR | 10 | TRACE | -- | 12 | 1 tbsp. |
| MILK | 100 | 2 | -- | 96 | 2 cookies |
| WHITE | 150 | 8 | 25 | 122 | 8 oz. |
| CHOCOLATE | 210 | 8 | 25 | 149 | 8 oz. |
| SKIM | 100 | TRACE | TRACE | | 8 oz. |
| SODA | 145 | -- | -- | 20 | 8 oz.* |
| TEA | -- | -- | -- | 1 | 5 oz.* |
| COFFEE | -- | -- | -- | 2 | 5 oz. |
| SALAD DRESSING REGULAR | 150 | 16 | -- | 300 | 1 oz. |
| LOW KILOCALORIE | 40 | 4 | -- | 300 | 1 oz. |

*without cream or sugar

Day 6

| DINNER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. | REMARKS |
|------------------------------|-------------------|------------|--------------------|---------------|---------------|
| TOMATO NOODLE SOUP | 75 | 3 | -- | 932 | 1 cup |
| ROAST PORK W/ GRAVY | 413 | 32 | 70 | 79 | 4 oz. |
| W/ APPLESAUCE | 135 | 10 | -- | 143 | 1 oz. |
| 58 | TRACE | -- | -- | 2 | 2 oz. |
| FRIED FISH | 210 | 8 | 70 | 200 | 4 oz. |
| POT ROAST | 220 | 9 | 70 | 73 | 4 oz. |
| MASHED POTATOES | 195 | 7 | -- | 485 | 5 oz. |
| STEAMED RICE | 116 | TRACE | -- | 2 | 3/4 cup |
| CABBAGE | 15 | TRACE | -- | 8 | 4 oz. |
| PEAS AND CARROTS | 40 | TRACE | -- | 27 | 4 oz. |
| TOMATO GUMBO | 30 | TRACE | -- | 100 | 4 oz. |
| GERMAN STYLE TOMATO SALAD | 90 | 6 | -- | 92 | 1/3 cup |
| MIXED FRUIT | 110 | TRACE | -- | 15 | 1/2 cup |
| GARDEN VEGETABLE SALAD | 21 | TRACE | -- | 11 | 1 cup |
| COTTAGE CHEESE | 55 | 2 | -- | 228 | 2 oz. |
| ONION ROLLS | 70 | 4 | -- | 276 | 2 rolls |
| ASSORTED BREAD | 130 | 2 | -- | 158 | 2 slices |
| BOSTON CREAM PIE | 210 | 6 | -- | 282 | 1/6 9" pie |
| CHERRY COBBLER | 350 | 15 | -- | 169 | 1 1/2 x 3" sq |
| APPLESAUCE CRISP | 345 | 15 | -- | 208 | 1 1/2 x 3" sq |
| MILK | | | | | |
| WHITE | 150 | 8 | 25 | 122 | 8 oz. |
| CHOCOLATE | 210 | 8 | 25 | 149 | 8 oz. |
| SKIM | 100 | TRACE | TRACE | | 8 oz. |
| SODA | 145 | -- | -- | 20 | 8 oz.* |
| TEA | -- | -- | -- | 1 | 5 oz.* |
| COFFEE | -- | -- | -- | 2 | 5 oz. |
| SALAD DRESSING | | | | | |
| REGULAR | 150 | 16 | -- | 300 | 1 oz. |
| LOW KILOCALORIE | 40 | 4 | -- | 300 | 1 oz. |

* without cream or sugar

Day 6

| BREAKFAST | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|-----------|-------------------|------------|--------------------|---------------|
|-----------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|----------------------------|------------|----------|-----------|------------|
| GRAPE JUICE | 135 | TRACE | -- | 8 |
| CEREAL HOT | 130 | 2 | -- | 283 |
| EGGS | 170 | 12 | 550 | 118 |
| GRILLED HAM | 123 | 9 | 35 | 557 |
| SNAIL ROLLS | 550 | 30 | -- | 220 |
| MARGARINE | 70 | 8 | 24 | 95 |
| MILK | <u>150</u> | <u>8</u> | <u>25</u> | <u>122</u> |
| TOTAL | 1328 | 69 | 634 | 1403 |
| FAT % OF TOTAL CALORIES | | 46.8 | | |

BEST COMBINATION

| | | | | |
|----------------------------|-----|-------|----|----------|
| GRAPEFRUIT HALF | 95 | TRACE | -- | 1 |
| PANCAKES | 110 | 4 | -- | 304 |
| SYRUP | 180 | 2 | -- | 40 |
| BACON | 85 | 8 | 70 | 274 |
| COFFEE | -- | -- | -- | <u>3</u> |
| TOTAL | 470 | 14 | 70 | 622 |
| FAT % OF TOTAL CALORIES | | 26.8 | | |

Day 6

| LUNCH SHORT ORDER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|----------------------|-------------------|------------|--------------------|---------------|
|----------------------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|----------------------------|------|-------|----|------|
| CHILE CON CARNE | 460 | 18 | 70 | 1552 |
| FRENCH FRIES | 135 | 7 | -- | 146 |
| MILK (CHOC) | 210 | 8 | 25 | 149 |
| GARDEN VEGETABLE SALAD | 21 | TRACE | -- | 11 |
| DRESSING (REG.) | 150 | 16 | -- | 300 |
| POUND CAKE | 160 | 10 | -- | 171 |
| W/ CHOC ICING | 150 | 3 | -- | 25 |
| TOTAL | 1286 | 62 | 95 | 2354 |
| FAT % OF TOTAL CALORIES | | 43 | | |

BEST COMBINATION

| | | | | |
|----------------------------|-----|-------|----|------|
| HOT DOG | 290 | 15 | 40 | 728 |
| POTATO CHIPS | 115 | 8 | -- | 200 |
| JELLIED PEACH SALAD | 59 | TRACE | -- | 1 |
| ORANGE PUDDING | 160 | 4 | -- | 445 |
| W/ WHIP CREAM | 10 | TRACE | -- | 12 |
| W/ NUT BARS | 100 | 2 | -- | 96 |
| MILK | 150 | 8 | 25 | 122 |
| TOTAL | 834 | 37 | 65 | 1604 |
| FAT % OF TOTAL CALORIES | | 40 | | |

Day 6

| LUNCH | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|-------|-------------------|------------|--------------------|---------------|
|-------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|---------------------------|------------|----------|-----------|------------|
| PEA SOUP | 145 | 3 | -- | 987 |
| SEAFOOD PLATTER | 327 | 19 | 161 | 544 |
| BAKED POTATO | 145 | TRACE | -- | 5 |
| BROCCOLI AU GRATIN | 30 | TRACE | -- | 440 |
| GARDEN VEGETABLE SALAD | 21 | TRACE | -- | 11 |
| DRESSING (REG.) | 150 | 16 | -- | 300 |
| FRENCH BREAD | 200 | 2 | -- | 232 |
| MARGARINE | 70 | 8 | 24 | 95 |
| POUND CAKE | 160 | 10 | -- | 171 |
| W/ CHOC ICING | 150 | 3 | -- | 25 |
| MILK (CHOC) | <u>210</u> | <u>8</u> | <u>25</u> | <u>149</u> |
| TOTAL | 1608 | 69 | 210 | 2934 |

FAT % OF TOTAL
CALORIES

BEST COMBINATION

| | | | | |
|---------------------------------|------------|----------|-----------|------------|
| GLAZED CORN BEEF | 261 | 13 | 70 | 1069 |
| BAKED POTATO | 145 | TRACE | -- | 5 |
| MIXED VEGETABLE | 57 | TRACE | -- | 45 |
| JELLIED PEACH SALAD | 59 | TRACE | -- | 1 |
| ASSORTED BREAD | 130 | 2 | -- | 158 |
| MARGARINE | 70 | 8 | 24 | 95 |
| ORANGE PUDDING W/ WHIP CREAM | 160 | 4 | -- | 445 |
| W/ NUT BAR | 10 | TRACE | -- | 12 |
| MILK | <u>100</u> | <u>2</u> | <u>--</u> | <u>96</u> |
| TOTAL | <u>150</u> | <u>8</u> | <u>25</u> | <u>122</u> |
| FAT % OF TOTAL CALORIES | | 37 | 119 | 2048 |

Day 6

| DINNER | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|--------|-------------------|------------|--------------------|---------------|
|--------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|---------------------------|------------|----------|-----------|------------|
| TOMATO SOUP | 75 | 3 | -- | 932 |
| ROAST PORK | 413 | 32 | 70 | 79 |
| W/ GRAVY | 135 | 10 | -- | 143 |
| W/ APPLE | 58 | TRACE | -- | 2 |
| MASHED POTATO | 195 | 7 | -- | 485 |
| PEAS AND CARROTS | 40 | TRACE | -- | 27 |
| GARDEN VEGETABLE SALAD | 21 | TRACE | -- | 11 |
| DRESSING (REG.) | 150 | 16 | -- | 300 |
| ASSORTED BREAD | 130 | 2 | -- | 158 |
| MARGARINE | 70 | 8 | 24 | 95 |
| APPLESAUCE CRISP | 345 | 15 | -- | 208 |
| MILK (CHOC) | <u>210</u> | <u>8</u> | <u>25</u> | <u>149</u> |
| TOTAL | 1842 | 101 | 119 | 2549 |

FAT % OF TOTAL
CALORIES

BEST COMBINATION

| | | | | |
|------------------|-----|-------|----|----------|
| POT ROAST | 220 | 9 | 70 | 73 |
| STEAMED RICE | 116 | TRACE | -- | 2 |
| CABBAGE | 15 | TRACE | -- | 8 |
| COTTAGE CHEESE | 55 | 2 | -- | 228 |
| ONION ROLL | 70 | 4 | -- | 276 |
| MARGARINE | 70 | 8 | 24 | 95 |
| BOSTON CREAM PIE | 210 | 6 | -- | 282 |
| TEA | -- | -- | -- | <u>2</u> |
| TOTAL | 756 | 29 | 95 | 966 |

FAT % OF TOTAL
CALORIES

Day 6

| DAILY RESULTS | CALORIES Kcal. | FAT gm. | CHOLESTEROL mg. | SODIUM mg. |
|---------------|-------------------|------------|--------------------|---------------|
|---------------|-------------------|------------|--------------------|---------------|

WORST COMBINATION

| | | | | |
|----------------------------|-------------|------------|------------|-------------|
| BREAKFAST | 1328 | 69 | 634 | 1403 |
| LUNCH | 1608 | 69 | 210 | 2934 |
| DINNER | <u>1842</u> | <u>101</u> | <u>119</u> | <u>2549</u> |
| TOTAL | 4778 | 239 | 963 | 6886 |
| FAT % OF TOTAL CALORIES | | 45 | | |

BEST COMBINATION

| | | | | |
|----------------------------|------------|-----------|-----------|------------|
| BREAKFAST | 470 | 14 | 70 | 622 |
| LUNCH | 834 | 37 | 65 | 1604 |
| DINNER | <u>756</u> | <u>29</u> | <u>95</u> | <u>966</u> |
| TOTAL | 2060 | 80 | 230 | 3192 |
| FAT % OF TOTAL CALORIES | | 35 | | |

| | | | | |
|------------------------------|--------|-----|-----|------|
| RECOMMENDED DIETARY GOALS | 2700* | 30% | 300 | 2000 |
| | 2000** | | | |

* Calories for men 23 - 50 years old

** Calories for women 23 - 50 years old

National Academy of Science, "Recommended Dietary Allowances,"
(Federal printing office, ninth edition, 1980, Washington, D.C.),
p. 23.

Chapter VI

CONCLUSION AND RECOMMENDATION

The aspirations of present-day research is to provide realistic parameters concerning nutritional practices with the idea of promoting "optimal" health and performance. There appears to be very little evidence that consuming a diet consistent with the dietary goals will cause an individual harm. As previously mentioned, there is some scientific evidence which indicates that such a diet may be beneficial to one's health, and that our present diets may contribute to disease. What one eats today was not planned on the basis of scientific knowledge, nor arrived at without the influence of many outside factors. Regardless of these variables, the USAF Worldwide Menu provides a good means to meet the dietary goals if a diner selects entrees from the best menu combination as highlighted in Table 6-1.

There is the question of how far the USAF or any population should deviate from the dietary goals. This study of the USAF menus showed both fat as a percent of total kilocalories and sodium even under the best menu combination do exceed these guidelines. The specifics of these excesses will be addressed later in the chapter.

| DAY | KILOCALORIES | FAT % OF KILOCALORIES | CHOLESTEROL mg. | SODIUM mg. |
|------------------------------|--------------|--------------------------|--------------------|---------------|
| 1 | 2324 | 30.6 | 298 | 2497 |
| 2 | 2395 | 35 | 362 | 3307 |
| 3 | 2035 | 35 | 183 | 1741 |
| 4 | 2434 | 38 | 259 | 2516 |
| 5 | 2303 | 30 | 120 | 1674 |
| 6 | 2060 | 35 | 230 | 3192 |
| RECOMMENDED DIETARY GOALS | 2700* | 30 | 300 | 2000 |
| | 2000** | | | |

* Calories for men 23 - 50 years old

** Calories for women 23 - 50 years old

National Academy of Science, "Recommended Dietary Allowances,"
(Federal printing office, ninth edition, 1980, Washington, D.C.),
p. 23.

Table 6-1: Best Menu Combinations

The largest problem of the USAF menu occurs when a customer consistently chooses entrees from the other end of the spectrum--the worst menu combination, which does not correspond well to the dietary goals as detailed in Table 6-2.

| DAY | KILOCALORIES | FAT % OF KILOCALORIES | CHOLESTEROL mg. | SODIUM mg. |
|------------------------------|--------------|--------------------------|--------------------|---------------|
| 1 | 4468 | 43 | 927 | 6585 |
| 2 | 4826 | 43 | 887 | 4881 |
| 3 | 4686 | 40 | 362 | 7897 |
| 4 | 5034 | 49 | 970 | 6299 |
| 5 | 4384 | 37.6 | 372 | 8985 |
| 6 | 4778 | 45 | 963 | 6886 |
| RECOMMENDED DIETARY GOALS | 2700* | 30 | 300 | 2000 |
| | 2000** | | | |

* Calories for men 23 - 50 years old

** Calories for women 23 - 50 years old

National Academy of Science, "Recommended Dietary Allowances," (Federal printing office, ninth edition, 1980, Washington, D.C.), p. 23.

Table 6-2: Worst Menu Combinations

It becomes evident that to correct this problem the patron needs to possess some knowledge of nutrition and food composition. Educating the public on varieties of foods needed for "optimal" growth or maintenance, functional performance and well-being may be the key to improved nutrition. To blame variety or processing as the cause of poor health is almost like blaming the automobile for accidents. In both cases, education is essential.⁶⁶

To illustrate this point, one could reduce the excesses of the worst menu combination merely by knowing what foods to eliminate. Some suggestions would be:

- eat desserts only once per day.
- do not consume more than the standard serving size and in some cases take a smaller serving of each menu item.
- make either lunch or dinner a "light" meal, i.e., sandwich or soup and salad.
- select a variety of menu components that make up the Basic Four; fruit and vegetables, grain products, dairy products, and meat. By eating such a variety one would approximately meet the dietary goals for kilocalories, fat, cholesterol and sodium.

These few modifications, for example, can reduce kilocalories by 1500-2000. This demonstrates the need for nutrition education in order to develop an awareness of food composition, a knowledge of appropriate symbols and terms, an understanding

⁶⁶ Chou, Harmon, op. cit., p. 152.

of nutrient interrelationships, and an appreciation for many other factors associated with "good" nutritional status.⁶⁷

The last question of this study concerns the need to adhere to the dietary goals. Must these goals be followed strictly, or can one deviate from them? To be specific, the four nutrient components will be addressed separately to summarize the impact of each on the USAF menu. Following the discussion of each of the four nutrients studied, modifications of the USAF diet shall be considered.

6.1 KILOCALORIES

There is no question as previously stated that kilocalorie intake should be monitored closely. Our sedentary lifestyle requires a diet low in kilocalories. The USAF cycle menu does provide the opportunity for an individual to consume the recommended 2700 and 2000 kilocalories per day for men and women respectively as seen in Table 6-1. Even though women may need to eliminate an additional 300 kilocalories per day, this can easily be accomplished by eliminating one dessert from either the lunch or dinner meal.

No menu modification is necessary.

⁶⁷ Eckstein, op. cit., p. 9

6.2 FAT

The debate still continues regarding the "ideal" fat percentage of total kilocalories. There is a general agreement that the percentage should be reduced but dropping it to 30% of total kilocalories may be extreme. This percentage would make it very difficult to provide a variety of meals that would have acceptable texture and flavor. As previously cited, the consumption of saturated fats has decreased while the consumption of vegetable oil has increased. Since the consumption of these large amounts of vegetable oil within approximately the last ten years, there is a void of information as to what impact they may have on one's health.

Perhaps 35% of total kilocalories would be a satisfactory level for the amount of total fat that should be in our diet. This allows the reduction of the possible deleterious effects fat has on health, yet still provides a menu acceptable in flavor. The USAF menu does meet this 35% fat of total kilocalories using the best menu combination.

No menu modification is justifiable in the author's opinion.

6.3 CHOLESTEROL

Cholesterol has received a lot of publicity. Many studies show that most individuals can consume 300-800 mg./day without having a serious effect on serum cholesterol. This amount can be consumed because the body only absorbs approximately 40% of

the digested cholesterol.⁶⁸ Using this fact, even the worst menu combination of the USAF menu would be acceptable. However, some may not agree to the 800 mg./day level of cholesterol as being safe.

No menu modification is necessary.

6.4 SODIUM

The sodium level under both menu combinations was relatively high. This is a result of using processed foods such as soups and sauces which are often high in sodium. Though the USAF Standardized Recipes call for most products to be prepared from scratch, I believe that in reality this was not and is not occurring because of the time and convenience some processed foods provide.

There still is a question of the dietary goal of 2000 mg./day being a valid figure when many studies suggest that hypertension may be a problem of genetics. If sodium is to be reduced, menu modification can be accomplished through the reduced use of processed or convenience foods.

In summation, the USAF Worldwide Menu provides customers with a meal selection that can meet the U.S. Dietary Goals within realistic terms. Rather than trying to modify its menu, the USAF would find it beneficial to develop or promote an educational program to improve customer awareness of different nutritional values. The Air Force community has vari-----

68 Chou, Harmon, op. cit., p. 126

ous avenues available to bring such an educational program to its airmen. As a suggestion, the following methods could be developed to communicate this nutrition message:

- Labeling food items for their kilocalorie, fat, cholesterol or sodium content will make these values as common knowledge as the item's name.
- News releases from Headquarters Air Force Engineering and Services Center can be used in base newspapers or as handouts to diners.
- Programmed presentations, prepared by a central agency, can be used by the base food service staff during menu board meetings, squadron commander calls, and various other meetings to pass out information.

This education is especially important since the USAF menu can provide some unacceptable meal combinations when chosen by an uninformed patron.

This nutrition knowledge will tell the customer that a nutritious or "well balanced" diet supplies nutrients in needed quantities from a variety of foods. It is both unnecessary and unwise to develop a fixed combination of foods that is adequate because, no matter how well the items are liked, the combination will become monotonous and may be rejected. Instead of trying to develop an "ideal" or "best" menu combination, a continuous evaluation of present and new food items must be undertaken in addition to promoting a nutrition education program.

In the author's opinion, the present USAF Worldwide Menu does approximate the standards of the dietary goals and thus provides the USAF airmen the means of obtaining nutritionally "adequate" meals.

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